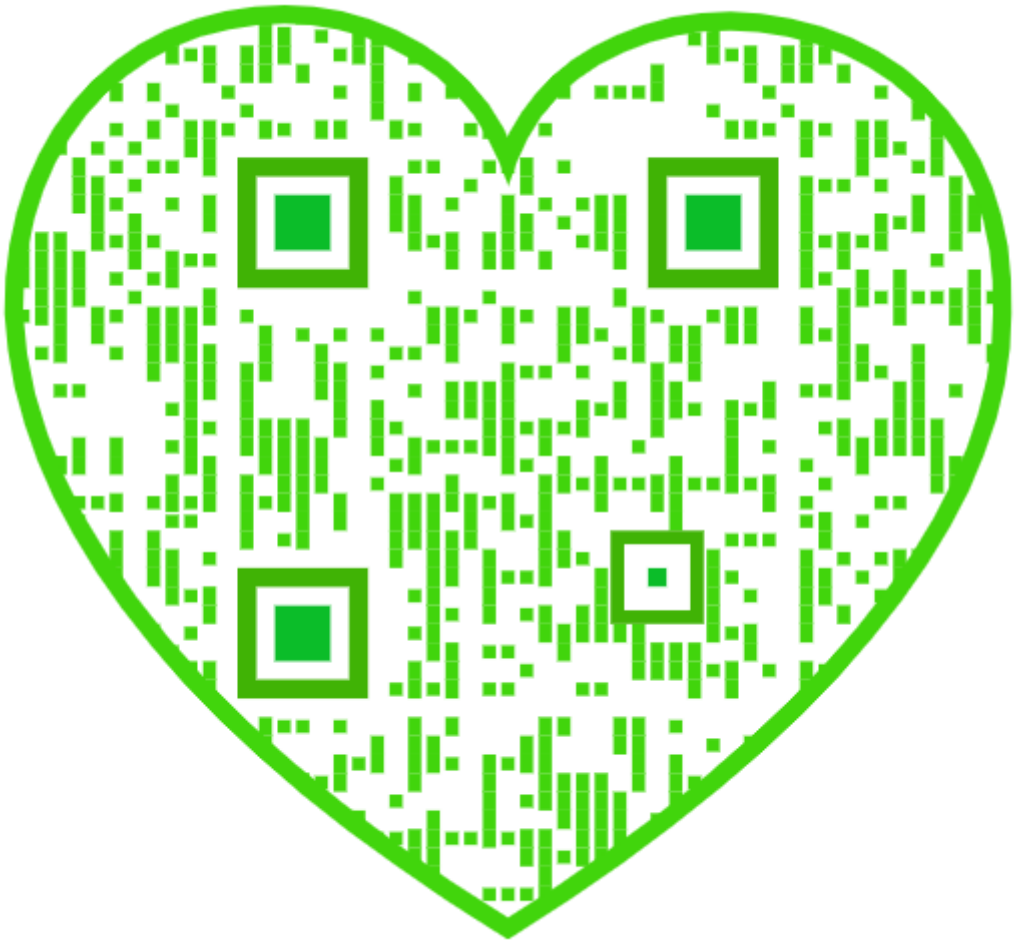
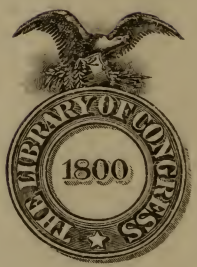




Class SF 751
Book .R8
1910

880
747

COPYRIGHTED 1904
By F. E. RUTHERFORD, D. V. S.
Revised 1906 and 1910

FRANK E. RUTHERFORD, D. V. S.

Title-page (i.e. cover-title)
bound at end of book.

SF751
.R8
1910

Introductory.

In presenting to you this book, I have tried to make everything plain, leaving out all technical and Latin names as far as possible. Every prescription is written in English so any one can understand them. In this book you will find the diagnosis, symptoms, etc., on one page, and in the back you will find the prescriptions for each disease and defect. Under the diagnosis you will find treatment, then all you will have to do it to turn to prescription leaf and use medicine according to directions. I want you to always remember this point: It is always necessary for any man, to have success with stock in treating them, to have confidence in himself, and also in the treatment he is administering. The horse is a very intelligent animal, and is always ready to obey man when he is well and able. The scientific method of treating horses has been greatly neglected. I hope those who purchase Private Lessons on the Diseases of the Horse and Cow will read and study carefully the points given therein. If you do this, you will be more able to treat your horse as he should be treated, and will become more attached to him. Remember that the prescriptions found in this book are the most reliable, as they are best products of veterinary science.

Yours very truly,
FRANK E. RUTHERFRD, D. V. S.,
Dallas, Texas.

PRIVATE LESSONS

—ON—

DISEASES of the HORSE and COW

—BY—

F. E. RUTHERFORD, D. V. S.

DALLAS, TEXAS

LESSON 1.

In the foot are two bones and part of another one. The first is the ospedis (or foot bone). The ospedis is nearly in shape of the foot behind, the bone is a small long bone which lies and braces a joint; this bone is called the osnavicular; it lies crossways of the heel. The next bone above is the oscornea; the union of the ospedis and the oscornea is called the coffin joint, and this is the joint that the osnavicular braces. Now above the oscornea is the osnuffranges; the union of these two bones is called fetlock joint. At the top of the ossnuffranges is the ostibia (or sin bone); the union of these two bones is called fetlock joint. At the back of this joint are two small bones called sessamoids; they are not held in place by the cartileges as most bones, but by the back tendons of the limb. At the top of the tibia, on each side, is a small long bone called metatarsel. These bones are about three-fourths as long as the tibia, and in advanced age adhere to it. The top of these two bones only reach up as high as the top of the tibia. Now on the top of these bones is the carpus. The carpus (or knee) consists of seven separate bones.

LESSON 2.

The Front Knee.—Many men suppose that the horse has a patella (or knee cap), but they are mistaken, there being no knee cap on front leg. There are seven bones in the knee. There are three bones which lie side by side on top of the tibia and small metatarsals; then on top of these three bones are three more, then behind, sitting edgewise, is another. So as to make it plain, I will begin with the outside of the right front limb and name them one by one. The first bone that lies on outside and on top of the tibia and metatarsal is called the unciform; the next one is magnum, next the trapeoizd. This completes the lower row. On top of the trapezoid is the scaphoids, next on top of the mangum is the lunare; and on top of the unciform is the cuniform; this completes the two rows. At the back we find the ospiciform; one end reaches back; the other end rests against the cuniform and the lower end of the radius. So, you see, we find seventeen bones from the radius down.

LESSON 3.

The next bone above the carpus is the radius or arm bone. At the top of the radius is a small bone attached to the ulna. This bone is at the top and behind the radius. The next bone above the radius is the humerus; the union of the scapular and humerous forms the shoulder point. All bones united (at joints) by a tough gristle substance termed cartillage; likewise all joints are supplied with a lubricating oil called synovia fluid, commonly known as joint oil.

LESSON 4.

Remember that no two bones come in immediate contact with each other; they are held apart by the cartillage and lubricating synovia. You will find a little hole in every bone—this is called the nutrient, where a nutrive vessel passes into the medullary canal. The last is generally called the marrow of the bone by non-professional men, but you must call it the medulla. The hole through the bone is called the spinal canal, and the marrow in the bone is called the spinal cord. The backbone, as a whole, is termed the spine. Now when we review we find 20 bones in the right front limb, and of course we find the same in the left bear-

ing the same position, only the carpus. To get their names we begin on the outside of the carpus, as we did on the right.

LESSON 5.

The ospedis may be called the pedal bone; the back wings or ends of the ospedius, the retrossel process. Right here a word. In some horses, especially thos advanced in age, the retrossel process may become forked. The upper prong is called the basiler process. The sensitive substance which covers the ospedis is called the lamina; beneath the ospedis is the sensitive sole; at the upper end of the hoof is the cornet or cornet ring; below the small bone, called the osnavicular, is the sensitive frog; at the heel is a brace usually termed the bars, or may be called the enflexes of the wall; the outer hoof is called the horny crest, or hard wall; we find the planter artery in the foot, with 15 branches running down from the main artery. The main vein of the foot is coronary venus plexus, which comes from the back part of the leg and reaches round on the outside, at the top of the hoof, to near its center in front, then drops down in the foot with many branches.

LESSON 6.

Next we will study the right hind limb. The bones of foot and limb up to the fetlock joint are the same bones by name as those of the front limb, and the same location, but the next bone above, which reaches up to the hock joint, is termed the large metatarsal. The next above is the oscunciform mangum. On top of this bone is the scaphoid; behind these bones is the cuboid. Now on top of these bones is a larger and longer bone, perhaps four or five inches in length, called the ostragalus; the upper part ot fhis bone forms the upper part of the hock, and is termed the ascalus.

LESSON 7.

Above this is the tibia, which is a long bone which reaches up and forms part of the stifle joint, as it is the largest bone in the horse. The union of these last two named forms what is called the stifle-joint ; in front of this joint is a small capped shaped bone called the patella. This bone acts as a brace to the stifle joint. The upper end of the femur

has a forked appearance; the end of one prong is perfectly round, which fits in a perfect round cavity in the large bone of the hip called the sacrum. This union of the sacrum and femur is known as the whirlbone joint. The sacrum is not classed with the bones of the limb. Thus we find twenty bones in the front limb, and only seventeen in the hind limbs.

LESSON 8.

We will now examine the bones of the head. In the fetus there are several bones, but by the time of puberty many of these unite. Of these seven flat bones of the cranium, five of them are single. The occipital, pareital, frontal, spheroid and ethmoid; one only, the temporal, is double. These bones circumscribe a central cavity, the craniel, which communicates behind with the spinal canal, and lodges the portion of the principal of the nervous centers—the encephaelon. The occipital occupies the extremity of the head, which it supports from the interior of the spine. The pareital bone is a wide and thin bone, very much arched to form the roof of the craneil cavity. It is bounded above by the occipital bone, below by the frontal. Will you name the bones of the front limb? Name bones of hind limb.

LESSON 9.

The frontal bone is a flat bone whose sides are bent in the middle at an acute angle, and are carried back, and a little inward to meet the wings of the superior bone. It assists in forming the craniel roof and part of the face. It is bordered above by the pareital, below by the nasal and the lachrymal bone and on each side by temporal bones. Next is the ethmoid bone. The bone is deeply situated in the limit between the cranium and the face, is enclosed between the frontal, the spheroid, the vomer, the palate and the supermaxilary bone. The spheroid bone is situated behind the cranium, between the occipital, ethmoid, palate, vomer pterygoid, frontal and pareital bones. The temporal bones enclose the craniel cavity literally, and articulate with the occipital, pareital, spheroid and the zygomatic bones.

LESSON 10.

The bones of the face in the fetus are so numerous and

hard to locate, and as it is not much used in surgery, I will only give their names .The face is composed of two jaws, a bony apparatus that serves as a support to the passive organs of mastication, the teeth. The superior, or interior jaw is traversed in its entire center length by the nasal cavities, and is formed by 19 bones, only one of which, the vomer, is a single bone. The pairs are the superior and interior maxillary, the palate, pterlgoid, zygomatic, lachrymal, nasal and superior and inferior turbinated bones. Of these, only four —the maxillaries—are intended for the implantation of the teeth. At the back end of the lower jaw it has a forked appearance. The upper fork is called the coronoid process; the lower one is the condyle and is called the sigmoid notch.

LESSON 11.

Now we will examine the vertebral column, or bones of the neck and back. The vertebral column, or spine, is a solid and flexible stalk, situated in the middle and upper part of the trunk, of which it forms the essential portion. It protects the spinal cord and sustains the thorax as well as the principal organs of circulation, respiration and digestion. This piece is formed somewhat considerable assemblage of short, single, tuberous bones, to which has been given the name of vertebrae. These bones, though all the construction is on a uniform type, yet do not offer the same conformation throughout the whole rachidean stalk. They are formed into five different groups. These groups are called vertebræs.

LESSON 12.

What is the servical vertebræ? Ans.—The bones of the neck. How many bones is the neck composed of? A.—Seven. Th first bone behind the head is called the atlas. The next is the dorsal, which has 18 bones, which the upper end of the ribs fasten to. These are called dorsal vertabræ. The third is the lumbar region, which only has six bones. And they correspond to the loins. In the fourth vertebraæ there are five bones in the fetus, but in the adult they became solid and form into one solid bone. This bone is called the sacrum, and is called the sacral region. The fifth are the bones of the tail and is called the coccyxial region. There are no definite number of bones in the coccyxial vertebræ, as some horses

have more than others. Some have as low as 10 bones, and some as high as 17, so you see there is no definite number. The cervicle, dorsal and lumbar vertabræs are called true vertebræs, while the other two are called false.

LESSON 13.

We will now study the thorax. The thorax represents a canoid cage, elongated from front to rear, suspended under the vertebræ of the dorsal region, and contains the principal organs of respiration and circulation. It is composed of bony arches, named ribs, 36 in number, eighteen on each side, and a single piece called the sternum, which serves as a support for the front ribs. The sternum is an osteo-cartillagenous body, elongated from front to rear, flattened on either side and slight curved. There is a space between each rib. This space is called intercostal space, also the muscles which attach them together are called intercostal cartillage. It is proper to say that in some horses that there are 19 ribs to the side, for we very often find them. Therefore, if we find 19 ribs we find 19 dorsal vertebræs.

LESSON 14

We will study the digestive organs. First, the preparatory organs, which includes the mouth, the tongue, salivary glands, pharanx, esophagus, stomach, duodenum, liver, spleen, pancres and intestines. A description of the first four I do not deem of any great importance, as you will understand them, or sufficiently at least. We will first describe the pharynx. The pharynx is the upper part of the esophagus (throat) and is the organ of speech in man or beast. The esophagus extends from the pharynx down and enters the stomach, in which is called the cardiac portion of the stomach. Next is the stomach which is the membranous sack comprised between the esophagus and intestines, as has been stated, and which composes the essential phenomena of digestion.

LESSON 15.

THE STOMACH.—The stomach, technically speaking, is called the ventriculus. It is situated in the diaphragmic regions of the abdomen, where it affects a direction transverse to the medium plane of the body. Its average capacity in a medium-sized horse is from two to three gallons. But it

varies greatly according to the size of the animal and the nature of its food. Tse stomach is larger in the common or low bred horse than in the fine bred; also in the ass and mule. Its weight when empty is from three to four pounds. The stomach has three coats—an internal or serous; a middle or muscular, and an internal or mucous. The front half of the stomach looks like the mucous membrane had been eaten off, as it is nearly smooth, while the pyloric or back portion is rough and full of little knots or bumps. The opening where the food passes out of the stomach is called the pyloric ring of the stomach.

LESSON 16.

Will describe to you some of the most prominent muscles, arteries and veins of the organs mentioned in last lesson. The muscles of the lips are the labial or obicular glands. The lips are supplied with blood by the palato—labial and the superior and inferior coronary artery. It is returned to the heart by the satelite veins of the last two vessels. The nerves are of two kinds—the moter, which are given off from the facial nerve and are distributed in the muscular tissues of the lips to cause its contraction, and the sensitive nerves, which are furnished by the maxillary branches of the fifth enchapalic pair. The blood vessels of the cheek are the bucal external maxillary and coronary arteries. The tongue is supplied by blood of two arteries, lingual glossopharyngeal and the hypoglossal.

LESSON 17.

Next is the salivary glands. The salivary glands are secretory organs annexed to the bzuccal cavity into which they pour saliva, a fluid that softens the food after its arrival in the abdominal portions of the digestive canal. The Pharynx. The blood sent to the pharynx comes from the pharyngeal and thyrodial arteries. The nerves are supplied by the glossopharyngeal, pneumogastric and great sympathetic. The esophagus is supplied by the division thrown off by the carodid artery and bronchial and the asopharyngeal arteries. The nerves of the asophagus are derived from the pneumogastric nerves.

LESSON 18.

We will now study the vessels of the stomach. The

stomach receives its blood from the two branches of the gastric arteries and splenic and its terminal branch—the left epipolic artery and by the biloric and epiloric arteries. The principal arterial ramification extend between the mucous and muscular layers. The nerves of the stomach are derived from the pneumogastric and solar plexus. In the stomach are begun those transforms by which alimentary matters are rendered capable of being assimilated. There the food comes in contact with the gastric fluid by whose elements and particularly the albumoid substance, after undergoing some changes.

LESSON 19.

Next we will view the alimentary canal, which is a continuation from the stomach through the abdominal cavity to the posterior opening of the digestive apparatus. The first after the stomach is the duodenum, or second stomach; then comes the small intestines, which is in an ordinary-sized horse about 72 feet in length, and we may say that it commences at the right culdesac of the stomach, from which it is separated by the pyloric construction. At its origin it presents a dilation, which in form stimulates a small stomach whose curvature are the inverse of those of the proper stomach, placed at the posterior face of the liver. This expansion, or head, of the small intestines, begins at the narrow portion, which at first is directed forward, then bends suddenly backward thus forming a loop, investing a base of the cæcum on the left side; then it is carried to the left, crossing transversely the sub-lumbar regions behind the great mesenteric artery. Here it is joined to the floating colon. It then reaches the left flank, where it is lodged and forms numerous folds. It then goes to the right and opens into the cavity of the ceacum, and a little to the inside, where the large colon has its commencement. This terminal portion is named the ilium, which means to twist. The part found in the left flank is called the jejunum, which means empty. From the pyloric to the great mesenteric artery is the duodenum.

LESSON 20.

THE SMALL INTESTINES.—The small intestines receive their blood from the great mesenteric artery. The one

that goes to the duodenum comes from the coeliac trunk. The large intestines which communicate by a large reservoir in the form of a culdesac is called ceacum. It is continued by the colon, which goes to the rectum. It is separated from the small intestines by the ileac-ceacal valve. The ceacum is a large sack, occupying the right hypochrondiach, where it takes a direction downward and backward. Its length ordinarily is between three and four feet and will hold seven and one-half gallons of fluid. The ceacum serves as a reservoir to the enormous amount of fluid injected. The greater part of this food passes through the stomach and small intestines, escapes the absorbent action of the villi and accumulates in the ceacum, where it may be said to wash alimentary with which it comes in contact, thus dissolving the soluble and assimilable matters this mass may yet contain, and favoring their entrance into circulation through the absorbent surface formed by the mucous membrane of the large intestine.

LESSON 21.

THE COLON.—The colon is divided into parts, which differ from each other in volume, and in disposition they affect in the abdomen cavity. The first is the large or double colon. The large colon is from 10 to 15 feet in length, and holds eighteen gallons. The arteries of the large colon are from the great mesenteric. (They are the colonic arteries.) The satellite vein enters the colon near the rectum or rump. The small colon enters or precedes the large colon, and its termination is in the pelvic cavity. It is about twice as large as the small intestines. When the soluble matter passes out of the small intestines the name changes and is called excrement. The excrement is compressed by the peristaltic muscles and are bound into little round masses, and find their way into the rectum and pass out. The rectum extends in a straight line from the pelvic cavity to the anus. The rectum is nothing more nor less than the continuation of the small colon, yet it has no ridges and its walls are thicker and stronger.

LESSON 22.

ORGAN OF THE ABDOMEN.—Next we will study the organs of the abdominal portions of the digestive canal. These

organs are three in number—two glands; the liver and pancreas, which pours into the intestines two particular fluids, the bile and pancreatic juice. The spleen, which is remarkable for its numerous vascular connections, is next. The spleen deserves to be studied. We will first study the liver, which is situated in the abdominal cavity, to the right of the diaphragm, and in an oblique direction downward and to the left. The weight of the liver of a medium-sized horse is about 11 pounds. The liver is fixed to the posterior of the diaphragm by four particular bands. The liver has three lobes, a left, middle and right lobe. The left is always the largest, right next and the middle the smallest. The blood vessels of the liver are the hepatic artery, portal veins and suprehepatic veins. The liver secretes the bile at the expense of the blood of the portal vein. The bile is an excrementation secretion. The bile assists in the purification of the blood, in digestion and colorification. The liver furnishes two very different products—bile and sugar. The secretion of bile in the liver is more active during digestion, yet it goes on in a continuous manner.

LESSON 23.

THE PANCREAS.—This organ has the greatest resemblance to the salivary glands and its physical properties, and for this reason it has been named the abdominal salivary glands. It is situated in the sub-lunar regions across the aortal artery and posterior venacave in front of the kidneys and behind the liver and stomach. Its weight is about 17 ounces. The spleen differs from the glands, not only as an excretory duct, but in all other ways. The spleen is situated in the diaphragmic region, close to the left hypochondriac, and appears as if suspended in the sub-lumbar regions, as well as the curvature of the stomach. The average weight of the spleen is about thirty ounces, but sometimes larger in size. The arteries emanate from the splenic artery, and plunge into the spleen at different elevations. The various branches of the spleen open into the splenic vein. The function of the spleen is not of any great importance. Animals where the spleen has been removed have continued to live and been in good health, and no inconvenience is manifested. From

the best authority it is concluded that the spleen is a diverticulum for the portal vein.

LESSON 24.

Now we will review respiration and its organ. As the nostrils are so well understood, I do not think it is necessary to describe them. After the air is inhaled into the nostrils it then passes into the larynx, which is the upper part of the trachea or windpipe, after which it passes down the pharynx and enters the bronchial tubes. These tubes resemble a tree with two prongs, with many branches from each prong. These branches enter the right and left lung. At that extremity we find the air cells. The lungs are spongy and soft. It is divided into two parts, the left and right, the left being smaller than the right. The blood runs from all parts of the veins. It arrives at the right sack of the heart, whence it is propelled into the lungs, there to be regenerated by the immediate contact with the air. It is the pulmonary artery that conveys this fluid into the parenchima of the organ and by the pulmonary veins ie is carried back to the heart. The nervous branches supplied to the tissue of the lung come from the same sources as those of the bronchial tubes. The nerves of the heart furnished by the cardiac plexus come from the pneumogastric and great sympathetic. The lungs are the seat of the absorption of oxygen and the expulsion of carbonic acid nutritive fluid.

LESSON 25.

THE HEART.—The heart is the center of circulatory apparatus. It is a hollow muscle, whose cavity is divided into a thick ventricle septum into two perfectly independent pouches. One is traced on the track of the dark blood, and propels it into the lungs; the other is situated on the course of the red blood and distributes it to all parts of the body. The heart is enclosde in a fibrous sack, named pericardium. It is distant from the fifth and sixth vertebræ about five inches. In a medium-sized horse the heart is about ten inches long, and holds from one to one and a half pints of blood. Its average weight while empty is about six and one-half pounds. The heart is larger in low bred horses than in high bred. The blood is carried to the muscular tissues of the heart by two large vessels, the coronary arteries. The

blood is carried from the walls of the heart by a single but important vein, which empties into the right auricle of the heart. The nerves come from the pneumogastric and great sympathetic, as before stated.

LESSON 26.

ACTION OF THE HEART.—The function of the heart is to maintain the circulation of the blood and contration of the two pounches. The right pouch sends the fluid to the lungs; then it returns to the left pouch; from this it is thrown to all parts of the body and is brought back again to the side of the heart. There contraction takes place simultaneously in the two cardiac compartments. In taking the heart at a moment when it is in a state of repose, that is, in the intervals between the two contractions we find that the two pouches are being rapidly filled with blood brought to them through the venous openings. When sufficiently replete, the auricles slightly contract and push a portion of the fluid they contain into the ventricles, these contracting immediately to propel the blood into the arteries. The passage of the blood of the arteries, or into the arteries, is necessary for the contraction of the ventricles, as at the moment of the contractions the valves are raised, and so prevent the reflux of the blood into auricles. When the heart returns to a state of repose these valves turn down, preventing the return of blood into the ventricle cavities, while the mitral and tricuspid valves subside against the walls of these cavities, and thus again allow the passage of the blood through the auricular-ventricular openings. The word systol means the contraction of the heart; the word disastole means the repose of the heart between two contoactions.

LESSON 27.

THE KIDNEYS.—The kidneys are two glandular organs situated in the abdominal cavity, to the right and left of the sub-lumbar regions lying against the great proas muscles, and stay in that position. First by an envelope of cellular tissues; second by the perteneum which passes beneath them; third, by the pressure of the digestive organs contained in the abdominal cavity. Their situations are not exactly alike, for the right is forward between the last two ribs, while the

left scarcely reaches to the last two ribs. The right kidney is always larger than the left. The right will weigh about 27 ounces, while the left will weigh only 25. The kidneys have a special artery and vein remarkable for their purpose. The kidneys are excretory organs. After the urine is sent to the kidneys they merely solve it and prepare it for excretion. Next are the ureters. They are a membraneous canal, having the diameter of a common size goose quill, which conveys the urine from the kidneys to the bladder. There is something remarkable about the ureter, in the way it enters the bladder. It does not pour the urine directly into the bladder. The ureter first pierces the muscular wall of the bladder, between the mucous membrances it passes for about an inch, and then opens on the surface of the latter. I don't think it necessary to say anything about the bladder. Its average weight when empty is about sixteen ounces.

LESSON 28.

GENITAL ORGANS OF THE MALE.—As so little is known of these organs, as those of the female, I will give a dense description of them. The generative apparatus. Individuals in the organic kingdoms possess the faculty of reproduction, and in the species to which they belong is a grand and beautiful law of vital force, which holds under its case the preservation of the organized world. In generation it demands the intercourse of two individuals, a male and a female. The female furnishes a germ (the ovum), and the male a fluid (the semen) which vivifies the ovum and renders it capable of developing or development. We therefore have to study the generative or genital organs of the female, I will to study the generative or genital organs of the male and those of the female. The semen is elaborated in the structure of two testicles, called lobular glands. Each is divided with a secretory duct, doubles, a great many times on its cell at its commencement, epididymis, and destitute sinousities for the remainder of its extent, which is named the different canal (vas deferens). This canal carries the fecundating fluid into the vesiculate seminal reservoir with contractive walls, where it accumulates, and whence it is expelled during copulation, by passing through the eajculatory canals or

ducts and the urethal canal. The penis when in act of copulation is introduced into the vagina, to the bottom of which it carries the spermatic fluid. The testicles (or two testis) are two glands, suspended on each side of the penis, between the thighs, where each occupies a particular serious pouch, the vaginal sheath (tunica vaginalis).

LESSON 29.

Generative Organs Continued.—The tunica vaginalis, in the domesticated animals, is the abdominal cavity, the serious membrane of which (the periteneum) becames a hernia in the inguinal ring and prolonged below the inferior (external) ring, so as to form a serious sack, which is enveloped by membranous walls. We have to study in the vaginal sheath. First, its interior; second, the enveloping membranes, which form the external walls, and to which we give the common name of scrotume. There are many more ligaments and membranes, but as they are purely technical and hard to locate, I will omit them. Each testicle is oval-shaped, flattened on both sides, is lodged in the culdesac at the tunica spermatic cord. The testicles secrete the spermatic fluid. Pure semen, such as is derived from these glands, is white, viscid, odorless and alkaline fluid. It contains a small quantity of liquid matter, in which is innumerable mass of spermatoozid. After the semen has passed through the genital canal, it is made much more equeous by the addition of the fluids secreted by the walls of the excretory ducts, or by the glands annexed by them. The spermatozoid are small elongated bodies. They have a flattened or lancet-shaped head, and a tail, terminating in a point. Their form is slightly modified while going through the excretory ducts. Their movements persist for several days in the genital organs in the female after copulation. They are suddenly arrested by water, acids; on the contrary, they are animated by alkaline fluids. The movements cease when the spermatozoid are exposed to a temperature of 120 degrees Fahrenheit.

LESSON 30.

1. How many bones in front limb? 2. What is the name of the bone of the foot? 3. How many bones in

the knee? 4. Name them, will you? 5. What is the first bone above the oscernea? 7. What bones lie behind the union of the ossafranges and tibia? 9. Do all bones come in in immediate contact with each other? 10. What holds them apart? 11. What is the first bone above the radious? 12. What is the bone above the humerus called? 13. What joint does the humerus and scapular form? 14. What little bone is that which sticks out (or protrudes out) at the top of the radius? 15. Is the ulna adhered to the radius during colthood? 16. What are all joints supplied with to keep up the wear and tear? 17. A hole in the side of a bone is called what? 18. What is the hollow in the backbone called? 19. What is the marrow in the backbone called? 20. The backbone, as a whole, is called what? 21. How many bones in the left fore leg? 22. How could we get the proper names and location in the opposite knee? 23. What other name has the ospedis? 24. What are the back wings of the ospedis called? 25. What shape does the resotarsal get in the advanced age? 26. What is the upper prong called? 27. What is the sensitive substance that covers the ospedis called? 28. What is below the sensitive sole? 29. How many frogs to the foot? 30. What are they called? 31. Where is the non-sensitive frog? 32. For what purpose do the frogs act?

LESSON 31.

33. What is the upper part of the foot called? 34. What are the enfluxes of the wall commonly called? 35. What artery do we find in the foot? 36. About how many branches does it have? 37. What is the principal vein of the foot? 38. What is the difference between the bones of the hind foot up to the fetlock joint and those of the fore feet? 36. What is the nam eof the bone that reaches from the fetlock joint to the hock? 40. How many bones in the hock? 41. What are their names? 42. What is the long bone that protrudes out behind the hock, and a little above, called? 43. The upper part of the bone is called what? 44. What bone above the hock? 45. Next bone above is called what? 46. What joint does these bones form at their union? 47. In front of this joint is a small bone, called what? 48. What is the next bone above? 49. What shape is the upper end of the femur in? 50. What bone does the round end fit in? 51.

What joint is this called? 52. Is the sacrum classed with the bones of the limbs? 53. How many bones in the hind limb? 54. How mony bones in the head of a colt? 55. How many are single of the seven? 56. What part of the head does the occipital occupy? 57. What shape is the pareital bone in? 58. What bone is above the pareital? 59. What bones are o either side of the last named? 60. What is name of first bone behind the head? 61. How mony bones in the neck? 62. What are they called? 63. How many vertebræs are there? 64. Name them.

LESSON 32.

65. How many bones in the dorsal vertebræe? 66. What do they serve as a support to? 67. How many bones in the lumbar vertebræ? 68. How many in the fourth or sacrum region, and is there a change takes place? 69. How many bones in the tail or coccyxial vertebræe? 70. How many ribs? 71. What is the sternum? 72. What does it serve as a support for? 73. What shape is the sternum? 74. What are the spaces between the ribs called? 75. What are the names of the muscles that hold them together? 76. What does the preparatory organ include? 77. What is the pharynx? 78. From the pharynx where does the esophagus extend? 79. What is the stomach called? 80. Where is it situated? 81. How much does it hold in a medium-sized horse? 82. Which has the largest stomach, well bred or low bred scrub horses? 83. When empty, how much will it weigh? 84. How many coats has the stomach? 85 Name them. 86. What is the opening where the food passes out called? 87. What are the glands of the lip? 88. What artery furnishes the blood? 89. What vein carries the blood to the heart? 90. What arteries supply the cheeks? 91. What arteries supply the tongue? 92. What are the nerves of the tongue? 93. Where does the pharynx get its blood? 94. What are the nerves? 95. Where does the esophagus get its blood? 96. What nerve? 97. Where does the stomach receive its blood from? 98. What are the nerves of the stomach? 99. Where does transformation begin? 100. What fluid does the food come in contact with in the stomach?

LESSON 33.

101. What is the alimentary canal? 102. What is first after the stomach? 103. What is the next after the duodenum? 104. How long are they? 105. Where do they begin? 106. Where does it cross transversely? 107 What then does it join to? 108. What is the terminal? 109. Illium means what? 110. Where do the small intestines receive their blood? 111. What is ceacum? 112. What separates the ceacum from the small intestines? 113. What is the length of the ceacum? 114. What will it hold? 115. How long is the large colon? 116. How much will it hold? 117. What is the small colon called that succeeds the large? 118. About how long is it? 119. How much does it hold? 120. Where does the rectum extend to? 121. What is the rectum? 122. Is its wall thicker than the colon or not? 123. Where is the liver situated? 124. Is it in the right or left? 125. What is the weight? 126. How many lobes has the liver? 127. Name them. 128. What lobe is the largest? 129. Which is the smallest? 130. Where does the liver receive its blood? 131. What veins? 132. What is the liver? 133. What does it secrete the bile from? 134. What does the bile assist in? 135. How many products does the blood furnish? 136. What are they? 137. When is the bile most active? 138. What does the pancreas resemble? 139. Where is it situated? 140. Is it behind the liver or in front? 141. How much will it weigh? 142. Where is the spleen situated? 143. What is its weight? 144. Where does it get its blood?

LESSON 34.

145. Will an animal live without spleen? 146. What is the larynx? 147. The air when enhaled passes where? 148. What do the bronchial tubes resemble? 149. What do these branches enter? 150. What do we find at their extremity? 151. Describe the lungs. 152. Which is the largest? 153. What does the blood return to the lungs for? 154. Which side of the heart does it return to before it is expelled into the lungs? 155. What vein carries the blood to the heart? 156. What artery carries it away? 157. What are the nerves of the heart? 158. What is the heart? 159. How many pouches is the heart divided into? 160. What are they called?

161. What is the sack called that encloses the heart? 162. About how long is the heart? 163. How much blood will it hold? 164. About the average weight when empty? 165. Which has the largest heart, well bred horses or scrubs? 166. What are the nerves of the heart? 167. Where does the right pouch of the heart send the blood? 168. Where does it go then? 169. Where then? 170. Where then does it go? 171. What takes place when the heart is in a state of repose? 172. The word systole means what? 173. What are the kidneys? 174. Where are they situated? 175. What great muscle do they lay aginst? 176. Are they situated exactly alike? 177. What is the difference? 178. Which kidney is the largest? 179. About how much will the right kidney weigh? 180. How much the left? 181. What is the ureter? 182. Does it pour the urine directly into the bladder?

LESSON 35.

183. How much does the bladder hold when empty? 184. What are the genital organs? 185. What is the germ called that the female furnishes? 186. What is the germ of the male? 187. Where is the semen elaborated? 188. What other name has the testicles? 189. Where are they located? 190. What is the shape of the testicles? 191. Where are they lodged? 192. Where are they suspended? 193. What color is pure sement? 194. What shape is the spermatozoid? 195. What are they arrested by? 196. At what temperature will they perish?

LESSON 36.

Shoeing.—Proportion foot according to height. Why? Because it puts the horse in a natural position on his feet. A horse's foot should be cut according to his height.

Hands high.	Heels, inches.	Toes, inches.
12	12-16	2 4-16
15	13-16	2 7-16
14	14-16	2 10-16
15	1	3
15 1-2	1 3-16	3 1-2
16	1 7-16	4 5-16
16 1-2	1 10-16	4 14-16
17	1 12-16	5 4-16

Dress the foot from the bottom, so that the shoe will fit the foot as a joint of the finest furniture. Why? Because when the shoe doesn't fit true the bearings are unequal, and it is an injury to the foot to stand or walk on it. The shoe must fit out to the full size of the foot. Why? When the shoe fits the horny crest it is where nature designated and nature will not lame your horse. Never rasp off of the foot. Why? You see, when you rasp off the hoof after setting the shoe back you destroy the hard part of the foot, and make it weak. Remember that the hoof is never too strong for the work it has to accomplish. Having no bearing behind the ospedis. Why? The heel of the horse acts just like the toe of a man. If your shoe or boot fits easy or loose, every time you step your toes expand. And when the weight is taken off, the toes relax, which assist the flexor tendons to handle the foot with ease. But put on a pair of tight shoes and you could not walk a mile but that you would go lame. So by shoeing so that the shoe will rest clear back as far as there is any hoof, or so that the bearings will be behind the back ends of the ospedis, you will cramp the heel as a tight shoe would cramp your toes, and the result will be clearly seen; so in the effort for the heel to expand, a hole will be worn out of the heel of the shoe. Be sure to look for this the first time you are at the shop. The shoe must be wider from the last nail hole back than it is crossways. Why? Remember the bearing is taken off the heel, and the shoe must be wider to add strength. A carpenter takes a two by four scantling and sits it on its edge to make it stronger. Do not neglect this point if you want the horse to travel with ease and without injury. The nails must fit the holes in the shoe tight. Why? First, if the holes are too large for the nails, the shoe is only held on the foot by the points of the nails and the heads; then by the holes in the shoe being too large you draw the shoe too tight to the foot, and it injures the foot by being in a cramp. So, you see, if the holes fit the nails, the shoe is held on by the body of the shoe and nails, instead of the ends and points of the nails. Points of nails must come out on a line. Why? Where you are not particular as to where the nails come out, one will pull in one direction and one in another, etc., so

you have the foot in a perfect cramp, thereby making the horse lame. Besides, at the next shoeing the oil nail will be in the way where you wish to put the new one, especially the nail that comes out high upon the hoof. But if they come out on a line they will all draw in harmony with each other, and you will not be bothered with the old nail holes. for they will all be beneath the ine where the new ones will come out, but most of the time will be cut away where your horse is shod regularly.

LESSON 37.

The Foot Continued.—It is an obejct of importance to preserve this important part of the horse. There is too little notice taken of the foundation of the horse—the foot. There are many diseases brought on by neglect of the foot. Cutting the frog, as most horse shoers do, is wrong, and I condemn it. First, the frog has many valuable offices to perform. One is, that it is a spongy and elastic substance without feeling. Still it grows and sheds a coat two or three times a year, and acts as a cushion in case the foot comes down on a rock or hard substance. It is to prevent jars or injuries to the sensitive part of the foot. If healthy, it prevents the foot and heel from contractions. Again, it receives moisture from the earth and retains it until it is transferred to the foot. In this way the health is kept up. It prevents inaflmmation and fever in the foot, which often results in lameness, etc. Now, let us examine the frog that is cut or pared oc by so-called horse shoers and blacksmiths. It has the same effect as cutting the sap of a green tree in the spring of the year; it destroys the pores, and you kill it where you cut it off; also, it is natural for the foot to receive moisture. If it is cut off you make a smooth surface, consequently it cannot receive and retain moisture to supply the foot as nature requires. A frog that has been dressed can be compared to a plank that has been dressed or planed off smooth. Take two planks—one has been dressed, and the other left just like it left the mills. Dip them both into water and see which will retain the moisture longest. So, you see, it is an injury to cut the frog, as the same demonstration will apply to both. Again, if the substance becomes dead, then it becomes dry. So if the horse is driven over rough roads, it is

a continual jar to the foot, and also the navicular becomes diseosed. I condemn placing a hot shoe to a horse's foot, many so-called horse shoers do this to find the high places in the foot, instead of fitting the shoe to the foot as it should be done. By burning any horny substance it is easier dressed right then, but after it becomes cold it is ten times harder than it was before it was burned. Some say they cut the burn away, but they are badly mistaken. True, they can cut that which they can see, but to cut affected parts away would be impossible unless you cut the foot off entirely. I will make a demonstration. Build a fire by a tree and burn out a hole, then take your ax and cut out the burn. You cut out the part you see, but can you cut the affected part away? No, indeed, you can't; neither can you on the horse's foot, for it is much more porous than a tree. The hoof has life, but it is non-sensitive. Your finger nail has life, but no feeling. Another thing: If you burn the foot, it will contract. Never attempt to spread the foot by force. It must have life, and expanded again to its normal size.

LESSON 38.

The Eye.—The seat of vision. What is meant by the retina of the eye? A.—The net work that lies in the back part of the eye is called the retina. Light admitted through the pupil to the retina produces vision. The portion of the eye that in some horses is brown and some gray is the iris of the eye. In the center of the iris is a circular black spot, which is the pupil, properly speaking—the window of the eye, through which sight is admitted. Why are some horses near-sighted? A.—Because the cornea of the eye is so prominent that the image of distant obejcts is formed before it reaches the retina, and there it is not instinctively seen. All the outside of the eyeball is called the cornea. There are horses that go blind once a month, commonly called moon-eye. (Periodical ophthalma is the proper name.) They call it moon-eye because it comes once a month. I am often asked the cause of this. It is very hard to explain. I might ask why a man would have a chill at the same hour every other day, and the question would be hard to answer. This disease is caused by the substance of secretions, called tears, becoming inactive, prevents the tears from performing their

office. The lachrymal glands are small lobular glands, and open from five to fifteen ducts upon the conjuctiver between the eyelid and its innerfold. The tears are spread over the eye by the reflex movement of the eyelid, called winking. The office of the tears is to preserve brilliancy of the eye. Its retntion is seen in the diamond appearance in the eye after death. There are mineral secretions in this secretion. Its composition is composed of water, a luminous matter, chloride of sodium and mineral salts. And as soon as it can no longer flow over the eye, when the eye becomes dimmed, and he can hardly see in daytime; the light of thed ay hurts his eyes, and it is true he can see better after night. Now, remember that blind teeth, as some people call them (wolf teeth), are said to cause blindness, but this can never hurt the horsein any way whatever.

LESSON 39.

Inflammation of the Bowels.—Inflammation of the bowels is so much like spasmodic colic, many men are deceived in the diagnosis of the disease, and can't tell one from the other. Also remember that there are many horses killed by the administration of wrong medicine (or slops, called medicine) that would get well if they would let them alone and let nature take its course. Simptoms: The horse gets up and down, wallows very little, gets up and appears to be better, sweats in the flank, also in the chest. Of course, the severe pain causes the rolling. There is no bloat or swelling with this disease. The only way to be sure of this disease is by the pulse. So you may better understand the effect htat inflammation has, I will compare the pulse to the mercury in a thermometer. Suppose you build a mild fire in a room and place the thermometer in there, and as the heat of the room increases, the mercury of the thermometer rises higher, and if the fire begins to die out, the mercury drops down. Inflammation of any kind has the same effect on the pulse. As the inaflmmation increases, the pulse increases in number of beats per minute, for it affects the heart. The inflammation causes the heart to contract faster, and as it is the contraction of the heart thta throws the blood through the arteries, you see that the pulse acts as mercury in a thermometer. So the horse with inamflmation. The pulse

begins to beat faster as the inflammation increases; but with colic, the pulse will be irregular.

Cause.—Caused by food going into the stomach when the stomach is disordered, and a fermentation takes place. We have this all seasons of the year, but mostly in the summer, or in the spring, I should have said. So, you see, the change of food has a whole lot to do with it. Your horse ought to be taken off the grass and be given hard food, all he can eat, unless you wish to give him inflammation of the bowels. I will tell you in the next lesson about the pulse.

TREATMENT.

Anconite, fl ext. .....20 gtt.
Gum Arabic (pulv.) ..... 1 oz.
Laudanum ..... 4 drs.
Digitalis ..... 6 gtt.
Warm water ..... 6 oz.

Mix. Give every sixty minutes until fever abates or pulse runs lower.

LESSON 40.

EXPLANATION.

Before beginning an explaation of any disease, I will now lay you a foundation by which you must be goverened invoriably. You must be governed by the pulse and temperature exclusively in treating internal diseases. The normal (or natural) condition of your horse's pulse is 36 beats per minute; that is, when he is in a healthy condition. Never begin to give your horse medicine until his pulse begins to go up. Many times the horse is like a man—gets sick and doesn't need any medicine. Haven't you been sick many a time and didn't take any medicine? Why, certainly you have. What cured you? Nature cured you, of course. Nature and disease work against each other. Nature works to build up the system, and disease works to tear down and bring about death. You must bear in mind that medicine alone never cured a brute or human, but only assists nature in effecting a cure. You must remember this, which I have learned by observation, that there are a great many stock killed by some ignoramus who don't know what he is doing (by medicine, or by slops called medicine) that perhaps would get

well if they were left alone and let nature take its course. Now, the next point to consider is the quantity of mericine and the different stages of diseases. If in the first stage the medicine would not be as much as if he was in the last stage, for it would take more in the last stage than it would in the first. Never give strong medicine in the nose or nostrils. Many horses have been killed by drenching them in the nose with strong medicine, such as chloroform and ether. I have seen more than two dozen, since I have been in the practice, killed just this way.

The proper place to take the temperature is in the anus. You can use the small human thermometer, or there is a veterinary one made, but I prefer the small. The proper place to find the pulse is under the jaw. Normal or "natural," 36 beats per minute, just on the bulge of jaw on the lingual artery, and always feel with your fingers, and not your thumb. You can also find the pulse i the tail or the fore limb just above the hoof, but not so distinct as under the jaw. Normal temperature, 98 1-2; breathing, 12 per minute.

Explanation of Disease and Defect.—The horse, in his natural condition, is subject to but few diseases (or disorders), but, like every other race of animals, the farther he is removed from that condition the more numerous his diseases become. I have tried to give in this work the descriptions of most of the organs, and illustrated their various uses. The regular and natural action of every organ of the body indicates the possession of health, and any deviation from this, however small it may be, or by whatever cause it is produced, is called diseases. These being guarded, we are led to the conclusion that whatever has a tendency to destroy or derange the natural functions must be injurious, and can be continued at the peril of life itself, whether it consists in the degree of labor imposed, in the quantity or quality of food, in bad water or impurity of the atmosphere. Some of the causes of disease are beyond the owner's control. Nevertheless, a large share of the ills of the animal kingdom, and the horse, especially, is the result of mismanagement and abuse. Most men treat the lower animal (especially the horse) as if they were given to him only for his

benefit—as if God had no higher purpose in the wonderful construction of the animal form than to enable man with greater ease to scrape and hoard up paltry pelf. In England and other countries, where the hose attains the greatest age and perfection, he is not put to labor until his size and power is developed, while in this country it is no uncommon thing to see horses put to hard work at two and three years old. The follow of violation of natural laws is evident from the multitude of blemishes on our young horses and mules, such as Ring Bone, Bone Spavin, the Rough Pins, Blood Spavin, Curb, Enlarged Joints, or more injuries which cause sudden death, or at least bring on lameness for life and premature old age. I have also stated that the regular and natural actions of every organ was essential to the enjoyment of health, and to preserve this healthy state the animal was furnished with the necessary means of throwing off superfluous or poisonous matter. Thus the means tend not only to the preservation of health, but also tend powerfully to the removal of disease. Remember, now, that medicine does not cure. What does the doctor administer medicine for, if not to cure? He only gives medicine to assist nature to effect a cure. As I told you in previous lecture, "Do you remember" that medicine did not cure, and the greatest doctor we have is nature. Nature works to build up the system; disease works to tear down and bring about death. Then when nature's effort alone is incompetent to perform the task, not by the use of medicine, which is calculated to co-operate with the enemy and destroy the patient, but by the use of such remedies, and such only as act in harmony with the known and acknowledged laws of life and health. In conclusion, you may be sometimes called in with advantage. Though we acknowledge our distrust of quackery of most of those passing under the title (Doctor of Veterinary Science). There is little science or intelligence of this class the world over. The owner should be very careful who he chooses to administer medicine to his valuable stock. I have met men that had been practicing veterinary medicine for 15 and 20 years that knew no more about medicine (confessed it to me) than a calf reading the Bible. He should see to it that if he employs one he is doubtful of that neither

medicine nor operation be used, unnecessarily severe or hazardous to the animal. Especially should the diabolical practice be interdicted of the abundant and indiscriminate use of poisons, oils, turpentine and tar, and hot irons applied to the sensitive wound or marked flesh, if certain or effectual remedies for removal of disease cannot be applied, such as augment the suffering or endanger the life of the poor dumb brute, may at least be avoided.

LESSON 41.

Flatulent or Wind Colic. — Cause When the acrid secretions of the stomach come in contact with the sabacous juices of the colon the acridness produced by the blood being impure, the disease is produced. When these come in contact a gas is generated, hence the swelling is produced, and swelling is continued as long as there is any swelling at all, and one of the most prevalent that we have. You can have it at any season of the year, yet more so in the summer. It is also the most dangerous, and kills more stock in the South and Southwest than any or all other diseases put together. Another important point is this: This is the only disease that has a limitation to the pulse. When the pulse reaches 75 the horse has only a few minutes to live unless he gets relief by tapping. Death is produced by the front end of the colon extending against the stomach and bowels and pushing the diaphragm until it ruptures and lets them start in on the heart and lungs, and he dies from suffocation (smothers to death).

Diagnosis, or Symptoms.—He gets down, rolls a little, and gets up and down very often, and begins to swell very much. By the time the pulse is beating 40 or 50 times per minute, the pulse beat hard and regular, so you will readily diagnose this disease by the swelling and pulse.

Treatment.—Give medicine prescribed every 25 minutes until swelling subsides and pulse goes down. If this does not relieve, you will have to resort to a trocar, an instrument made for the purpose, of which you will see cut on another page of this book. It is a long sharp instrument, and has a tube to carry away the gas. This instrument is inserted in the side of the animal on the left or right, ujst below the last short rib. You first cut the hide with the knife, and then

gently push the instrument in, slanting a little forward and upward. After it is in as far as it will go, you then pull out the knife, letting the tube stay in to bring out the gas.

LESSON 42.

Spasmodic Colic.—Cause: The animal has been worked or exercise until very warm; then, of course, he becomes very thirsty and drinks very excessively. This causes sudden contraction of the stomach, also a cramping and aching of the bowels, which causes very intense pain. It is impossible to produce this disease otherwise, yet it may be produced at any season of the year.

Diagnosis.—Drops down very suddenly when taken, shows symptoms of great pain, rolls about very violently, gets up and down often in first stage. He exercises himself more with this disease than any other. Now go to the pulse, and you can get the proper diagnosis. If you find a fluctuating pulse, it is spasmodic colic regardless of external symptoms, for no other disease produces any fluctuating in the pulse at all, whatever. Therefore, it is impossible for you to mistake it. The fluctuating pulse is caused from the contraction of the walls of the heart, which throws the blood out in a quiver.

Treatment.—Give prescription which I prescribe every 25 minutes until pulse runs lower. Caution: I will here caution you, and it refers to this and all other diseases alike. In no case give a dose of medicine as long as the pulse is at a standstill, or coming down.

LESSON 43.

Inflammation of the Kidneys.—Treatment: Give prescription every 60 minutes until pulse runs lower. Cause: The kidneys being the only excretory organs in a horse, they have to perform their proper work (or function), otherwise this disease is cause; and the reason they are unable to perform their work is that the secretions are very impure, for we might say it is caused from indigestion and a general derangement of the digestive organs. This is not a very prevalent disease, yet you may expect death to ensue if the case does not get proper attention. It is one of the most dangerous diseases we have, and we can have it any season of the year.

Diagnosis.—The way you know this disease is, he lays down, but does not roll much; but when he does roll he has an inclination to stop on his back. The reason of this is, the momentary pressure of the bowels on the kidneys gives him momentary relief. He feels better in that position than any other. In the first stage, when he gets up, he will stretch out and make (water) or try to. Small quantities pass, and seem to be very painful to him. The kidneys being in close connection with the urinary organs produce this inclination to urinate. You go to the pulse, and it beats perfectly regular, but run up according to inaflmmation (or fever.) So the regular pulse and the inclination to lay on his back, and the stretching out when up, is the way you distinguish this disease from any other. No other disease has these symptoms. This is often taken for gravel by those who know nothing about stock.

LESSON 44.

Lung Fever or Pneumonia.—Cause: By driving hard and leaving your horse in the open air, or from having overheated from shipping, etc., then cold settling on the lungs, this disease is produced. You should always blanket your horse after a long drive should the weather be cold.

Diagnosis.—He breathes hard, has a shivery chill, stands on his feet all the time, never lays down until he lays down to die, pulse hard and regular all the time from the first symptoms to the last. Put your ear down against his breast, or just behind his fore leg and you will hear a harsh rattling sound just like wind blowing through dry leaves. As no other disease has these symptoms you cannot mistake it.

Treatment.—Blanket your horse if cold weather, and keep in close stall where the wind won't blow on him. Give no kind of forage while sick. Your horse will not live over six or eight days with this disease. If he is bad you may shave off the hair opposite each lung and put on a good cantharides blister. Give him medicine ever 60 minutes until fever abates or pulse comes down.

LESSON 45.

Thumps.—Caused by pores of the skin becoming closed so as to prevent the secretion called perspiration from coming

through the skin. Then by getting your horse overheated it produces what is called the thumps, and once this disease, you prefer to call it, your horse is liable to have it every summer. There have been many theories as to its location. One, however, I think to be the most popular, is a fluttering of the heart (or throbbing). But this theory I can't believe, for I have never known or heard of the thumps killing a horse, and I have known of horses having the thumps for years, and it never hurt them. Notwithstanding, I don't think a horse so valuable with the thumps as without them. My reason for not believing that the heart is implicated is, first, that the throbbing or thumping does not take place near the heart. I have held my finger on the pulse of the horse that had the thumps, and the tumping would take place twice to one beat of the heart. The thumping is in the flank, nowhere about the heart. Second, that it would be impossible to disturb the heart without producing a heart disease, and it would kill the animal. The most rational conolusicn is that the peritoneum becomes loaded with fat, and by getting the animal too hot, produces a spasmodic contraction in the organs called the peritoneum. The peritoneum. The peritoneum is the membrane (as I have told you before) that envelops the intestines.

LESSON 46.

Chloroform and Its Use.—Chloroform was discovered by Mr. Gutherie, of Sacketts Harbor, New York, 1831. Chloroform is a heavy, clear, odorless, diffusive liquor of ethereal color; a burning sweet taste, soluble in about 200 parts of water of hydrogen and three of chlorine. Medical properties and uses: Chloroform, when applied locally, is very irritating and produces pain, which may be followed by some numbness. If the chloroform be prevented from evaporating it will blister. Taken internally, it acts upon the general system, as it is very quickly absorbed. It quiets the pain in spasm. The useful effects of a full dose of chloroform, administered by inhalation, are the rapid production of relaxation of the muscles, slow breathing, upturning of the eyes and total insensibility. Sometimes frothing at the mouth takes place, and more rarely twitching of the ilmbs. The insensibility is generally produced in from one-half to five

minutes, and generally lasts from seven to ten minutes, but may be kept up for hours with perfect safety by cautiously renewing from time to time. Ether Sul. Ether is a liquid composed of 74 per cent of Ethyl Oxide and about 26 of alochol containing a little water. Medical use as a stimulant, locally, it is irritating.

LESSON 47.

Opium or Laudanum.—The concrete, milky exudation obtained in Asia Minor from the unripe capsule of Papaver Somifurem—or poppy plant by incision and evaporation. Preparations of opium. Dose, 20 to 60 grains.

Extractum Opii—Extract of opium. Dose, one-third less than powdered.

Pulvis Ipecacuanhea et oppii. This is Dovers powder, 10 grs. of ipecac and opium; 8 grs. of sugar of milk. Dose, 1 to 4 drs.

Tinctuara Opii—Vinegar opium. Dose, 1-2 to 2 or 3 ozs.

The two principals of opium are morphine and codine.

LESSON 48.

Canibis Indica.—Canibis Indica is made from a plant that grows in East Indies; called Ganga plant. Indian hemp is also a proper name for it. Dose F. E. Canibis Indicia, 10 drops to 4 drs. Physiological actions. A stimulant, increase mental and other moter activity. stimulates the nerves, etc., and depresses sensation. Intoxication, complete and heavy sleep are caused by it, according to the size of the dose. Sal. Soda—This plant (sal. soda) grows on the bank of the seas. They grow abundantly in Frnace, Scotland and Ireland. Dose. One dr. to 1-2 oz.; come in large white lumps, and is easily dissolved in aqua (water). It stops the accumulation of gas in case of colic. Tr. Peppermint.—Tincture of peppermint is made from the plant (or from the leaves and stems) that grow in Europe, and is called Menthe Piparita. The spices of mint is a native of Great Britain, but has been conveyed to Europe, and this country. Medical uses is to allay pain, relieve spasmodic pain of the stomach in case of colic, etc.

LESSON 49.

Ac. Hydrocyanic (or Prussia acid).—Acidum Hydrocy-

anideum Dilutum is a colorless, faintly acid liquid having an albumen-like odor, physiological action; produces drowsiness, depression; slows the circulation. In tetanus and strychnine poisoning it is an excellent remedy.

Fistula or Pollevil.—Fistula is caused from a bruise from a kick or bite on the wethers from a stallion, bumping his wethers against a stable, or from wallowing or turning over on a rock. In fact, any way to bruise the periosteum of the bone, this causing a swelling to take place, and then it forms full of little openings called tubes. This disease is called incurable by some, but I have always been very successful in treating it. I have never failed to effect a cure.

Treatment of Fistula or Pollevil.—Take a razor or sharp instrument and shave off the hair over the enlarged part, and then you are ready for an operation, which is the only way it can be cured. Take a large scalpel or knife and cut in the muscle an opening about an inch deep and 5 or 6 inches long; then take a sponge and saturate it with monsells solution of iron, then run through the wound. This will stop the blood. Then gauge your knife and go another inch deep and use the monsell again, and so on until you go to the bottom of the tumor. There you will find it hollow and full of little tubes. Then change knives; take a crooked knife blade and split those little tubes open good, then saturate with medicine.

LESSON 50.

Treatment for Fistula After Operation.—Cotton seed oil, 16 ozs.; carbolic acid, 1 oz. Mix and shake well before using. Inject in bottom of cut once per day and pack the opening with oakum to keep the wound from closing up at the outside first. Want wound to heal from bottom.

Acidum carbolicum, or carbolic acid, is made by the distillation of coal tar; occurs either in crystal or crystalline massed; white or colorless when pure, but when impure it is either reddish or will become so by exposure; is soluble in alcohol, chloroform, ether, and the oils will dissolve it. Uses: It is used as a caustic to cause sloughing in fistula; is used as an antiseptic, and employed internally a gastric sedative in small doses for dogs. Cotton seed oil (Oleum Gossypii Seminis). Made from cotton seed and purified. It is used as a nutrient and tonic; also used instead

of olive oil. Also wash the wound out every three days with peroxide of hydrogen by squirting a little in the bottom with a small syringe.

Hydrogen Peroxidum.—Peroxide of hydrogen. It was discovered by Thenard in 1818. The commercial peroxide is colorless. It should always be kept in a cool, dark place, and well corked. When it comes in contact with a wound it produces a frothy foam. As long as the foam comes back yellow, there is pus; white there is no pus.

LESSON 51.

Table of Weight and Measure.

20 grains make one scruple—gr. stands for grains.
3 scruples make one drachm—dr. for drachm.
8 drachms make one oz.—oz. stands for ounces.
12 ounces make one pound—lb. stands for pouds.
R. means recipe. Mist or Mistura, a mixture.
A.A. of each.
Pil or pilla—a pill or pills.
Bolus—a large pill.
Pulv. or pulvis—a powder. Q. S. Sufficient quantity.
Spts. means spirits.
Spts. Vinii, Rectif.—Alcohol pure.
Spts. Frumenti—Whisky.

Adeps means lard; Ol. means oil; Tr. means tincture; Oz. means ounce; S. S. means one-half; S. or Signa means write. O. or Octarus means one point.

Cong. or congius means gallons; Ft. or fiat, means to make.

Garg. means gargle.

Gtt., or guetta, means drops; M., or Misce, means mix.

This mark (℥) stands for ounces.
This mark (ʒ) stands for drachms.
This mark (℈) stands for scruples.

LESSON 52.

Div. means to divide. Inj. means to inject. In or in die means daily. T. I. D. means three times a day. Q. D. means four times daily. Fl. means fluid. F. E. means fluid extract. A minimum dose means the smallest dose that will produce the physiological action. A maximum dose is the larges does that can be given with safety. So remember,

if you are not sure of the dose, put down a small one instead of a large one. The dose of any medicine is twice the dose per rectum as per the mouth. Dogs take about the same size dose as a man. A teaspoonful represents about 1 dr.; a dessert spoonful, about 2 dr.; a tablespoonful about a half ounce. A wine glass, 2 ozs.; a coffee cup, about 5 ozs. The regulation dose, according to age: Over three years old, full dose. From one and one and one-half years old up to three, half does. From nine months to eighteen, one-fourth part. From four and one-half months old to nine, one-eighth part. From one to four and one-half months old, one-sixteenth part.

LESSON 53.

Sunstroke or Heartstroke.—Sunstroke or heartstroke is called heartstroke because a horse will have it, and never be in the sun at all. So, you see, it is a mistake about the sun causing it altogether, don't you? It is caused by becoming overheated and too much work, and getting too hot. It is also called Isolation, but this is when it is caused from the sun. Sunstroke is simply prostration from heat, usually in very hot weather, especially when there are thunder showers. It occurs more often in July and August. Symptoms: The animal may be getting along all right, but will suddenly get dizzy and weak. After sweating freely, this suddenly stops and dries up. He begins to pant, nostrils dilate, hangs his head, then finally goes down. In some cases they will be completely prostrated, and will lie flat on their side. Occasionally there are convulsions of the limbs, which are insensible. He may die in half an hour in spit of professional treatment. The temperature may run up to 109 or 110 to 112, but when it goes to 112 they will never get well. Sometimes they recover when they only reach 109. There is more of fear when there is plenty of water, so I believe that water has something to do with it.

Treatment.—If the temperature stays above 105 there is great danger—that is, if it stays there any great length of time. The first thing to be done is to reduce the temperature as quickly as possible. The best way to do this is by showering. Some pack on ice, but I like the showering much better. You shower the animal with a light spray, then let him cool off slowly; then he has a chance to make a nice

recovery—far better than to cool him off with ice in a hurry. For internal ereatment, giv stimulants: Sptr. vim rectifi, (pure alcohol), 4 to 6 oz. every few hours. So, you see, the idea is to cool him off and give stimulants. You may inject a little strychnine hypodermically, say, half gr, every four or five hours.

LESSON 54.

Enlargements.—Enlargements, such as puffs of a soft nature, in front of any joint or enlarged oscalus, back part of the hock. As to wind galls, as they are called, prick them in several places with a pen-knife, then rub on the following ointment three times a day until you get up a good sore, and if the puff hasn't gone then, take a compress made of rubber (elastic) and compress once per day, letting it stay on 12 hours each day; or on at night and take off in the day. If you can't get the elastic compress already made, I will tell you how to make one: Take a good suspender (new) and sew the edges together, making it about six inches wide; then work holes in so you can lace it as tight as necessary to cause the enlarged parts to go away. Remember, you must blister the enlarged parts well before using this.

Don't forget when you put on the elastic bandages you must put on a sponge under it, next to the puff. Now, this wants to be drawn tolerably tight. These puffs are caused by strains, generally caused by overloading animals. Large horses are more subject to them than small ones, but any colt may have them. They very seldom lame a horse, notwithstanding I have seen a few horses lame. The bunch had become hard in the places where they were lame, and resembled a tumor. In such cases as the last a light blister would be of benefit to stop the lameness, even if you do not rmove the bunch.

LESSON 55.

Blind Staggers.—Blind staggers are caused from the capillaries of the brain becoming clogged or coagulated, and cease to circulate, and in this stage we would say he had congestion of the brain; but you know, as I have told you, that inflammation always follows congestion.

Symptoms.—He stands with his head drooped, and seems to be sleepy. (Right here a word: Some people will say

he has sleepy staggers, but remember it is only the first stage of blind staggers.) Second stage: He will become restless, and walk to the left or right all the time, according to the side which is affected most. Third, and last stage. He becomes wild, and will walk over you, or the fence, or anything in his way. You can prick him with your knife or anything, and he will not care for it. He seems to be insensitive to touch, although I hardly think he is. When they get in this stage there is little hope for them, if any at all.

Treatment.—If you get to him in the first stage, bleed him in the nose under the vomer, in the large nasal veins, and take as much as two or three gallons of blood. We do this to start up circulation. Give No. 48 at once. To stop the blood take a little piece of obsorbent cotton, say, as large as a hen egg, and push it up his false nostril to where your knife went through, and the blood will stop immediately. Then give him Sulphate quinine oz. SS, Spits. vin rectify oz. 10. Sig. Give him one ounce in pint of warm water every two hours, and continue till gone. If cold weather, keep well blanketed; if warm weather, keep him in a well ventilated stall. The cause of the capillaries becoming coagulated is from the system not being in good condition, and retaining ergot from corn and hay and grasses of all kinds—smutty corn and hay especially. High-fed horses are more subject to it than any other kind. You will find that nine cases out of every ten will be high-fed stable horses (horses that are kept up and fed on high feed, etc.). What causes blind staggers? How are the little veins affected over the brain? What are the first symptoms? What the second? What is the first treatment? What is the second? How much blood would you take? What is blood? Why do you bleed, if it is injurious to bleed?

LESSON 56.

Lockjaw or Tetanus.—Lockjaw is caused from two things From nail pricks and the hole closing up, and not allowing oxygen air to get to it. In this case, you see, it would be caused from pain. I have had many cases, and most of them were caused from nails, and many of them did not make the horse lame. I had a case a short while back (the horse belonged to Virge Steger, Bonham, Texas),

that lockjawed from a nail wound, and they did not even quit driving him. The wound should have been cut out funnel shape, "as shown you in lesson," when it was first done, and there would have been no further trouble. But, you see, he neglected this and lost a fine horse that he valued at $500. With the best of treatment, you cannot save over 20 out of 100 cases.

Symptoms.—The horse will stand with his head from his body, and his tail arched, and walk stiff, for his muscles are contracted. I do not like to treat this disease, for we can save so few of them. When they give up, when down, and the respiration is not impaired, there is little hope. I find, by experience, if he lives fifteen days, he is liable to recover; if twenty days, he is sure to recover. The horse, as a rule, stands all the time. If he gets down, he can't recover on his side at all; so if his legs become swollen from standing, you had better make him a good sling and swing him. The pulse at first is not affected, but grows stronger and harder as the spasm increase. When a spasm throws a horse down, there is little hope, especially when he sweats freely.

Treatment.—Give plenty of pure air, and give no hard feed; give gruel made of linseed meal, say, four pounds to two gallons of hot water; then cool off and put in a box or bucket, so he can drink it. Give no water in any other way, and he will need no purgative. If needs other food, give him scalded bran and oats mixed.

Medicine to Give Internall.—Prescription:

F. E. Gelsemium.

F. E. Lobelia.

Tr. Belladonna, a. a. oz. 2.

AQ. Q. S. O. 1.

M. Sig. Give one ounce every four hours as a drench, or twice as much per anus. Give hypodermically three grains of morphine every six hours.

LESSON 57.

Ol Origanum.—Oil Origanum is an oil made from a plant called Wild Margorum. The oflwer is of a pinkish color or rose tine. It has heavy leaves, and is a native of this country and of Europe. I have seen it growing abundantly in this country in Virginia, and also in Pennsylva-

nia. I think it blooms from May until October. It has a peculiar odor. When made into oil it is yellow, and smells like camphor. Origanum is used mostly in liniments, as it is very penetrating.

Oil of Cedar.—Oil of cedar is made from the cedar plant that grows all over the United States. You have seen it growing, have you not? The oil is used mostly in liniments, mixed with other oils, and cut with alcohol.

Camphor.—Camphor or Cam-pho-ræ is obtained from wood of Cinnamomum or Camphoræ. It is imported in the crude state; that is, before it is purified. Camphor has been found in different plants, but commercial camphor is only derived from two plants. Camphoræ of Cinnamomum; comes in white masses of a tough crystaline structure, easily dissolved in a little alcohol, ether or chloroform. I will not explain, as you already know lution of iron, then run through the wound. This will stop hat it means, but will just simply say that you will get in the following forms in your practice: Camphoræ —Gum camphor; dose, internally, dr. 1. Aqua, Camph. (water camphor), 1 dr to 1 oz. Linementum Camph. (camphor liniment), is composed of two parts of camphor and eight parts of cotton seed oil. Used in coughs as well as liniments. Spirits of camphor (spiritus camphora) is composed of 100 parts of camphor to 1000 parts of alochol.

Physiological Actions.—Antispasmodic or nerve stimulant, counter irritant, irritates the skin.

LESSON 58.

Gelseumium Yellow Jesmine. — (Extractum Gelsemii, Fluidum) is made from the root of the above named plant. Fluid extract of gelsimium or F. E. Gelsimium. Dose, 1 dr. to 1 oz. Physiological action; nerve seditive, lowers body temperature.

Croton Oil (Ollium Tiglii).—Croton oil is not very much used in the horse practice, but I will give you the way to use it, and you will understand why it is not used very much. A fixed oil expressed from the seed of croton tigilum. When given to horses at all, 10 to 25 drops; to cattle, you may give one-half to one drachm. Physiological actions—is a powerful irritant; undiluted, it seriously injures the skin, caus-

ing blemishes, and may cause fever. Cattle are the only animals that can take it internally with safety. It can be used on dogs, if used with caution. For cattle, as a purgative. When the bowels will not move, you may give 40 drops of croton oil to one-half drachm of calomel; or you may give oil tiglii with linseed oil, or in salts; but I think that it acts best with calomel. A horse in a healthy condition will breathe about one time to every three beats of the pulse. In other words, he breathes only 12 times per minute, and if faster, something is wrong somewhere. There are four stages observed in fever: First: Weakness, loss of appetite and low spirits: Second: A shiver or chill, uneasiness, flanks move quickly and short, nostrils more or less ditended, urine cantly and highly colored. Third: After a time a coldness is succeeded by a great heat and thirst; sometimes one leg or ear is hot and the other cold. Fourth: When the fever has lasted for some time the skin becomes moist, the bowels and kidneys act more freely; the pulse becomes full and the mouth moist. When fever is cause or accompanied by disease, it is called symptomatic fever, or after an accident the same, or from liver or lungs. Fever is called idopathic when not caused by disease or accident. Bleeding in the veterinary practice is almost discarded. We bleed in case of congestion, as I have told you. Another thing, while we are on this subject, is this: Any animal, while sick, should have a good stall, and fixed so he can be comfortable, and have no loud talking or any kind of a fuss about him while sick. If you will watch you will see that horses are like men in many respects when they are sick. They are nervous and have very little patience. I would advsie you to always remember this point, as it is very important. If any disease be of a very depressed kind, give iron and nux vomica and general diet. The nux will keep the bowels regulated.

LESSON 59.

Review Lesson.—How does the heel of a horse act when he is walking?

If a horse is fifteen hands high, how ought his feet to be cut to be proper?

Why should we not have bearings on the heels of a horse when shoeing?

Should a horse's hoof be trimmed from the bottom when shoeing?

Why should the nails of a shoe fit perfectly and even?

How long ought a shoe to stay on a horse?

Why should nails come out even, "on a line," when shoeing a horse?

How often does the horse shed the frog when in a healthy condition?

How many frogs has the horse in each foot, and what are their uses?

Can a foot be healthy without moisture, and why, if not?

Can a foot be healthy with water all the time? If not, why not?

Give an illustration why a foot can't be healthy with too much water. Without any moisture.

How many purposes has a non-sensitive frog?

How many reasons can you give why the nails should come out on a level?

Can you tell me what causes corns on the feet?

Tell me why the frog should not be cut away?

Is it wrong to place a hot shoe to a horse's foot? If so, why?

What effect will too much heat have on the foot?

What is the eye? What is the retina of the eye? What is the iris of the eye?

In the center of the eye is a small black spot. What is this called?

What is the outside of the eye called?

Horses that go blind once per month—what is that called? What is it if not moon-eyed? What causes the eye to become this way?

What spreads the tears over the eyes? What are tears composed of?

What are wolf teeth sometimes called by people who don't know anything about teeth?

Do these teeth we speak of ever hurt the horse so far as value goes?

What is inflammation of the bowels? What causes it, and what time of the year are horses most subejct to it?

Is there any bloat or swell with this?

What is the cause of flatulent or wind colic?

What is the last treatment for this disease?

How can you know this disease from any other?

How often do you give medicine, and how can you tell when medicine has acted?

Tell me how you would trocar a horse?

What are we governed by in treating internal disease?

What is the natural condition of your horse's pulse?

What does nature do in regard to curing a horse when he is sick? What does disease do?

Does medicine cure? What does it do, then?

Do nature and disease work in harmony with each other?

What is the first stage of a disease? Second and third? Where is the most proper place to take the temperature?

Where is the proper place to take or feel the pulse?

What is the spasmodic colic, and what is the cause?

Give me the symptoms of spasmoic colic.

LESSON 60—REVIEW CONTINUED.

Give me the receipt for spasmodic colic. How often do you give medicine, and how can you tell when it has or has not had the desired effect?

What is inflammation of the kidneys, and what is the cause? Is this a prevalent disease, or not? What are the symptoms in the first stage? What kind of a pulse has he?

What is lung fever or pneumonia? What time of the year do we mostly have it What are the symptoms? Give treatment. How often do you give medicine?

What is thumps. What causes thumps? Did you ever know of thumps killing a horse?

What would be your obejctions to a horse that had the thumps if it did not hurt him?

What proof have you that it does not disturb the heart?

What is the peritenum wall?

When was chloroform discovered? What is the color, and what is it composed of? What are its medical properties and uses? What is the effect when applied externally? How long would it take to put a horse to sleep with it?

What do we use opium for, and in how many forms do we use it in veterinary practice?

Opii pulvis means what? What is opii made from?

Will you please name the receipt for flatulent colic? How often do you give this medicine?

What is canibis indicia, and where is it obtained? It has another proper name. What is it?

Of the F. E. Canibas ind., how much is a dose? What is its effect?

What does acidum hydrocanicum mean? What other name has it?

Dilitum means what?

What effect does hydrocyanic ac. have on the circulation?

LESSON 61—REVIEW CONTINUED.

What is fistula, the cause and diagnosis?

What is the treatment for fistula? What do you use to stop the blood, and how? What do you find at the bottom of the fistula? What medicines do you use, and how?

What does acidum carbolicum mean? What is carbolic acid made from? When pure, what is the color? What will dissolve it What else is it used for?

Oleum Gossypii Seminis means what? What was it made from?

When was peroxyde of hydrogen discovered? By whom and where? What do we principally use it for in veterinary practice?

What is the word prescription derived from, and what is its meaning?

What does the word cito mean? Curare, tuti, et. jucunde?

Give me the mark for oz. dr., prescriptions, scruples, etc.

What is the maximum dose? A minimum dose? What does a teaspoonful represent? What does a dessertspoonful represent? One tablespoonful? A wine glass? What a coffee cup?

Div. means what? What does T. I. D. mean? What does Q. D. mean? What does filtra mean? Fl. means what? What does F. E. mean? Inj. means what? In or in. di. means what?

Regulating the dose, how much should a three and one-half-year-old take?

From one and one-half to three years old?

From nine to eighteen months?

From four and one-half months old?

What causes sunstroke or heartstroke?

What are the symptoms of heartstroke? How high does

the temperature go sometimes? In what part of the country are they most subject to it? What is the treatment?

What do we mean when we speak of enlargements on a horse? Give treatment for wind galls, so-called.

LESSON 62—REVIEW CONTINUED.

Give me a prescription that you would use in blistering.

Do these puffs or wind galls always lame a horse?

What is the blind staggers? Symptoms? Treatment? How much blood do you take?

What is lockjaw or tetanus? What is the cause? How many different things will bring it on? What are the first symptoms we see? If we keep him alive fifteen days, what is the chance? If twenty, what is the chance? Give me treatment for lockjaw.

Oil Organum is made from what plant?

What countries is the plant a native of?

What is oil of cedar made from?

What are these oils mostly for?

What is camphoræ or camphor made from? What are the physiological actions of camphor?

What are the four stages observed in fever?

When fever is caused or accompanïed by disease, what is it called? When caused from liver or lungs, it is called what?

Is bleeding practiced very much now in veterinary practice?

What does Extractum Gelsemii Fluidum mean?

What other name has Gelsimium?

Ollium tiglii means what?

What is the physiological action?

Ollium tiglii means what?

What is a dose for a horse? What for a cow?

How do the muscles of a horse lay? How, then would you cut not to cut a large blood vessel?

How many times does a horse breathe per minute when he is breathing naturally? What is his normal circulation? How can you tell when a horse has fever? What is his natural temperature?

LESSON 63.

Bone Spavin.—Bone spavin is found on the hock or hind

knee of horses and mules. First, there will be found a swelling, and that will go away, and a hard bunch will be left, and you will hear people say: "My horse is lame; din't you see that big knot?" I will say here, and you must not forget it, the knot or bunch that you see on the leg does not cause lameness, and it is a big mistake that people get into their heads about spavin. Spavin is caused from strain, from hard pulling, or from getting a leg hung in a hole, or from falling through a hole in a bridge, etc. Anyway, it is caused from a strain. It is a strain of the cartilege of the capsule that surrounds all joints. A cartilege is a hard gristle that holds the joints together, and prevents the bones from coming together. Now, if you will listen, I will tell you what causes a horse to go lame when he has spavin, and you will agree with me that it is not the bunch on his leg that causes lameness, but that it is caused from the friction of the joint. The capsule being ruptured or bursted, the synovia fluid (or joint oil—you have seen it when cutting a beef's knee) which keeps up the wear and tear of the joint (in man or beast) is allowed to leak out when the joint is ruptured, and the horse gets lame from the friction of the joint. Proof: You take a spavin horse (ask any one who ever owned one) and they will tell you that when he first starts off, after stopping awhile, he can hardly go. Why? Because while standing, the oil has leaked out, and the parts rub together roughly and cause lameness. Now, what makes the bunch on the outside of the rupture, or the knot, as you may call it? This is easy enough explained. The laceration from the joint (the joint oil) deposits itself outside of the bone, of course, just as all synovia form other joints not ruptured. Of course, if it was put there by nature to make bone, it will continue just the same after the rupture as before. It is inhuman to cut this bunch off, as some people will advise. Don't you see that it will only make bad matters worse? It will only make the rupture larger and more difficult to cure with the right treatment. Treatment: If you get to it early, you can kill it wtih salve called No. 8.

Sig. Shave off the hair and take a little sharp instrument (called puncturing iron) or knife blade and puncture or prick 75 little holes in the bunch to the bone and then apply medicine to the part and bandage. (Make bandage

as I taught you in treating wind galls.) Keep this up nine days, and then let him stand 20 days or more to give rupture time to knit together. You see, the puncturing and the salve get up a great inflammation, and this is what helps to effect a cure. In a very bad case, say from one to one and a half year's standing, you would have to fire the horse. I will proceed to tell you how this should be done: You first shave off the hair as before, and get about three sharp-pointed firing pins (made for the purpose, or you can have them made), swelled at one end like a solderig iron, so that it will hold the heat. (See firing instruments on another page). Build a fire and place your irons in the fire, and get them to a white heat (not red), have some one to hold up the opposite leg so he won't kick you, and proceed to fire as you punctured, or not so close together. Make the holles about a quarter of an inch apart, and go all over the bunch, puncturing it to the bone. Bandage as before, and use hog larg instead of medicine.

LESSON 64.

Fistula of the Sternum or Breast Bone.—This is a very difficult disease. The sternum is an elongated cartilege that the ribs attach themselves to, and protect the lungs, heart, etc., from jars and injury. Many people think we have fistula only on the wethers, but we have it on various parts of the animal. We call it pollevil when on the poll of the head, but it is the same as on the wethers, and would be called fistula. Fistula of the sternum is caused mostly by a prick or a kick. Let me give you some experience here I have had with fistula of the sternum at Denison. A man by the name of Steve Hitchcock had a fine race colt to jump on a picket and a little back and upward, struck the sternum about the forth cutlet (rib) that rupture the cartilege of the sternum and caused a running sore. He and another man began doctoring it, injecting first one thing and then another. They kept that up until the second Tuesday in December, which was about two weeks from the time that he sent for me. I went, and in the presence of another veterininarian told him that h would never get well until an operation was performed. He seemed to doubt my opinion, and kept up the same treatement for weeks, when he called me again. I went, and on examination I found that the bone had become

necrossed about six inches, and was running corruption behind fore leg, and in front, and at the same point where the picket had entered, which went directly to the point mentioned. I told him that the bone was necrossed, but that his colt was in much worse conditon than when I saw it before. He submitted to an operation, and the work was done. First, harness was put on the horse, and he was cast, turned on his back, legs drawn down, wth one man to each leg (to hold to side) and one to hold the head. The operation first began bu cutting the skin about six inches backward and about an inch deep, then drawing cotton saturated with Monsell's soluton through the cut. The blood was stopped, and I continued to cut until I went to the breast bone. There I found this diseased bone; then with a curet (a sharp, cup-shaped instrument) I scraped the bone, taking away all the diseased part, which must have been a teacup full or more. After the operation I washed out the wound good with a weak solution of bichloride, about 1 to 500, and then pacged with absorbent cotton and let stand four hours. Then, removing the cotton, I proceeded to treat as I taught you in former lessons. Now, if you will follow my instructons above, you can perform ths operation. The main thing, and mos successful thing, in fistula is to not be afraid to cut. Give me prescription for treating fistula.

LESSON 65.

Blain in Cattle.—This disease has many different names. It is known better by the symptoms. The animal is stupid and dull, eyes run water and are inflamed, and a continual stream of saliva runs from the mouth. You will also find ulcers under the tongue, in the back part of the mouth, or both. The lids of the eyes swell and the lids may become red. There may be swelling on other parts of the body as the disease advances. The saliva may be streaked with blood, the pulse quickened, the flanks heave and the animal begins rapidly to lose flesh.

Treatment.—The ulcers may be lanced, making a large opening. You will find a yellow fluid to run out, and likely pus. Take ten grains of carbolic acid, one dr. tr. opii to one ounce of warm water. Then take a goose or chicken feather from the wing and thoroughly swab out and clean the ulcers.

After this is done, take salt and water and wash the parts and use my blood purifier in tablespoonful doses twice or three times a day, as you think the case requires. If the bowels are constipated, give 15 oz. sulphate magnesia in quart of warm water. Repeat this every 12 hours till the bowels move good. If the fever is high, giv 20 or 30 gtts. of T. R. Aconite root every 30 minutes until fever goes down. The animal must be well cared for, and kept in good shelter. Feed on soft feed, such as bran, mash, etc. This disease is caused from eating poisonous weeds, etc., generally in the spring while cattle are pasturing. After death, if you will dissect, you will find the stomach lined with little ulcers; also the intestines. The normal pulse in cattle is 45 beats per minute; respiration about 12 per minute. The most accurate place to find the pulse is under the jaw (on lingual artery) at bulge—wide part. Purgative for cattle when sick with blain. This is to be given immediately after you detect what the trouble is:

Sulphate of magnesia, o.z 18.
Oleum Tiglii, Gtt. 10.
Calomel, Gr. 30.
Warm water, qt. 1.
M.

Sig. Give at one does, and if it does not have the desired effect, repeat in 24 hours. Now, don't forget if the weather is cold, or even damp, that the animal should be kept in shelter.

LESSON 66.

Constipation of the Bowels.—Cattle are very subject to this trouble, especially in the winter and early spring, but may be found at any season of the year. The most common causes are bad treatment, unsound food, starvation, poor shelter in bad weather. These are the symptoms of all inflammatory diseases.

Simptoms.—The fæces (or dung) is seen in hard lumps, and requires quite an effort to pass it. The nose becomes dry, the breath hot, and great change of countenance on part of sufferer. The pulse will be found quick, and everything will indicate fever. No time should be lost, and you should resort to treatment at once. Soft water and castile soap should be used freely per rectum, and warm linseed oil given

in 16-oz. doses every six hours until bowels are open good, then give my blood purifier in tablespoonful doses every 12 hours for at least two weeks. Be sure to feed on soft feed, such as bran mashes and green grass, if in the spring. Your cow will die every time if you don't resort to proper treatment.

Diarrhœa in Calves.—This is a common and very destructive disease. Many calves are lost for want of proper treatment in this disease. It most frequently occurs before the calf is three weeks old. It is then caused by the milk being unwholesome, or being exposed to cold, or from being half-starved. Then one full meal will produce diarrhœa or purging. It frequently occurs when the mother dies, or the calf is taken away and half cared for. Great care should be taken at the time of weaning. The changing of food or gruel should be given with caution, as too large a mass might contract the disease, and it is very difficult to arrest. The sudden chanfige must be effected slowly, the new milk being mixed with gruel or skimmed milk.

Symptoms.—The calf is continually straining. The matter that is passed is mixed with slime or mucus, sometimes streaked with blood. The calf staggers when he walks, and refuses to eat or take food of any kind, and becomes very weak. At the latter stage of this disease the calf is hardly able to rise alone, the dung becomes more thin, and is mostly mucus and blood. The best thing in this disease, as in all others, is to take it in time.

Treatment.—Take tr. or opii, 1 to 2 dr., boiled sweet milk, one-half pint. Mix together, and give every six hours. If the purging is not arrested, add to this one level teaspoonful of chalk (prepared), the chalk being well powdered. The does will depend on the age of the calf. If only a few days old, half the quantity will be sufficient. As he begins to recover, great caution should be taken not to feed him too much at once.

LESSON 67.

Costiveness in Cattle.—Calves are sometimes attacked with this disease when only a few days old. It is then caused by the coagulation of the milk in the bowels, and you will see the bowels terribly distended. In this case you will give very thin meal gruel (corn meal, I mean), and a table-

spoonful sulphate of magnesia as drench, and give freely, injections of castile soap and warm water. The cure in very young calves is not certain, but it is not well to sit dows and do nothing. This has, in many cases been effective. When calves, two or three months old, become affected, it is usually due to too sudden changes of fluid food, as from gruel to dry or stimulating food. This is a dangerous complaint, as the paunch is likely to be filled up with undigested food. Now, an operation with the hand (have the arm well oiled) and empty the back bowels, may be of great value. Rake it well. Also dissolve half pound of epsom salts in one pint of warm water and drench. If this does not operate in six hours, repeat until it does operate. Then with a small quantity of linseed oil will be good, and as the animal begins to come to himslf again, give a small quantity of my blood purifier once or twice per day in food as he will eat it. This will correct digestion and give him pure secretions. I will give you my ideas on bleeding. I do but little bleeding. My reasons are easily explained. First, the food and substances that enter the stomach make the blood, and the blood makes every secretion, and secretions act to organs the same as moisture does to vegetables. If you deprive a plant of moisture, decay is the result. It is true that blood is life, and when you bleed, you are sapping away vitalitqy. Remember that medicine does not cure man or beast; that all we can do is to assist nature by application and administration of medicines. Then we can see the wrong that may be done in bleeding away the best agent that God has been so wise to create. No man or beast can have too much pure blood. Show me a man with a good supply of pure blood, and I will show you a robust, healthy man; one that, if he should meet with a serious wound, and you should ask his physician if he thought he would recover, you would hear him say: "Well, it is a serious wound, but a man with an extraordinary constitution, a good supply of blood and lots of vitality, like him, has a good show for recovery." But reverse the case, and the doctor will sigh and say: "Well, I don't know; he has but little blood, vitality is small, and we can only hope for the better, but chances are against him." So, you see, if the blood should be impure, and you bleed him, you take away the good blood with the bad. So

you will only make bad matters worse. The animals need all the vitality they possess to remove disease. If a man only bleeds to start up circulation, where there is congestion, I have nothing to say against it, for I sometimes do that myself; but some men bleed by the gallon to purify the blood. If your horse's blood is bad, and he is in bad condition, I would advise you to give him a course of my blood tonic No. 37. "For sale by all leading druggists." This will cleanse the blood of its impurities, and then the blood will produce more secretions, and that is what is needed to make a healthy constitution. As a general rule, men that are in favor of bleeding are men who know but little (or nothing) of the physiology of the blood and of the secretions.

LESSON 68.

Hoose in Calves.—This is a disease to which calves are very subject. The calf coughs as if he had a cold, but soon runs into consumption and results in death. After death, thousands of little worms may be found to inhabit the air passages, but before death the latter symptoms are a slight discharge at the nostrils, often tinged with blood; the breath is hot, the pulse quick, the eyes run water and the bowels are costive. Still, in some cases, I have seen the bowels loose, but streaked with mucus.

Treatment.—As soon as the calf begins to cough violently, you should make it as comfortable as possible. Give it my blood tonic in teaspoonful doses every six hours, and 20 to 30 gtts. of turpentine. If costive, give injection of soapsuds and warm water after the turpentine has been given. If the fever is high, give tr. belladonna and aconite root, 12 to 15 drops of each, three or four times a day till the fever abates. The blood tonic is to cleanse the blood and open the bowels. The turpentine is given for those little worms. Tr. aconite and belladonna is to reduce the fever and prevent the excitement to the heart so it will perform its affair properly. Tr. of Veratrum and Digitalis, 10 drops each, will substitute for aconite and belladonna. Learn this, and do not wait until your calf is sick, and then have to look it up. Always take the case in time, for that is half, or more, in the successful treatment for man or beast. A stitch in time saves nine. Canker in the mouth of calves follows each other so fast in

cutting that the gums and mouth become sore, and this is not an uncommon disease, either.

Symptoms.—The calf refuses to suck, and you can see a continual discharge from the mouth. Numerous little pimples will be formed in the mouth or on the tongue. As the disease progresses, these little pimples run together and form ulcers, and the breath becomes very offensive.

Treatment.—Give one and one-half ounces of epsom salts dissolved in warm water. Repeat this dose eevry six hours until bowels are loose. Then keep in good shape by giving a tablespoonful of my blood tonic every six hours. Burn ulcers with diluted carbolic acid by the use of a mop on a stick made of cotton, and follow this with alum wash. Repeat this every morning until ulcers are dried up. If the calf needs nourishment, give him milk, just milked from the cow. You can do this with a syringe.

LESSON 69.

Flux or Slimy Black Rot in Cattle.—This disease is very prevalent in spring and fall. It is more common on wet or swampy land, but is found on all kinds of land. It is among the worst diseases that cows are subject to, and is a common disease. It destroys more cattle than all other diseases put together. It begins by frequent effort to expel the dung, which is thin, slimy and dark. The animal is restless, and shows plainly that she is suffering great pain. Frequently dropping down and rising again, and you will hear a rumbling sound in the bowels. If treatment is not readily resorted to, you will lose the case, although he may seemingly get better and chew the cud, but he will get weak, and his food will go through him undigested. There is no question but what this is a liver complaint or affection, and as we surgeons make the diagnosis, we tap the animal gently over the liver, and he will be seen to shrink, for the blow caused apparent pain. If these symptoms are present, there is no doubt but what this dreaful disease is present. I might say right here that if you were selecting cattle for the market, or otherwise, test the liver, as it will enable you to detect any unsoundness of it, and may be money in your pocket, for this disease may be lurking in the system, and the animal be apparently well. Now, as this disease progresses, the

dung runs off, and has a very offensive smell; the hair stands on end and the nose dry, the pulse is quick, the eyes inflamed, and the animal breathes hard. Causes: The causes are various. Among them is taking cold; getting hot from long drives and turning on damp pastures cattle, especially that are used to being kept up; or, if it be a cow, it may be taking cold after calving. It may be produced by bad sheltering or poor food during the winter. There is perfect evidence that the mucus membrane of the intestines is inflamed, so a good blister opposite affected part will be of great value.

Treatment.—Give small doses of raw warm linseed oil three or four times a day. Also give aconite and belladonna in 15 gtt. of each to run fever down, and half ounce tr. opii. every three or four hours until rest is assured. As the animal begins to recover, give on tablespoonful of my blood tonic three times a day in bran. The use of this medicine will purify the blood and secretions and act slightly on the bowels; and as it will be dangerous to stop the purging too suddenly, these powders will be of great value. It is also good for the purification of the secretions of the liver. You should be careful for awhile; make him comfortable, and do not allow him to eat too much green food at once. But if this treatment fails to stop the purging, you may know that the liver is too badly deranged for the disease to yield, so you must give blue mass twice a day, night and morning. The dose may be half a scruple. Keep the animal out of bad weather, and about every four or five days give four or five ounces of sulphate magnesia in one quart warm water.

LESSON 70.

HINTS RELATIVE TO MILCH CATTLE.—When your cow has impure blood, you may see the hair drop off in patches, also a scurff will be seen at the roots of the hair, and lumps on the skin. If let run ulcers and sores come out on the neck and body. There may be seen pus and corruption discharging from the eyes. This disease is a twin brother to farcy in the horse, and is nothing more or less than badly adulterated blood. Causes: Bad shelter in fall and winter, unwholesome food, half starvation, neglect and carelessness, with cruelty and ignorance of men. These are the principal causes. How milk is produced: Now, let me reason

with you awhile. I will give you a scientific view of how the milk is produced, then you can better understand what kind of substance you are daily taking into your stomach when you drink the milk or eat the butter made from such cows. I feel sure, if you understand the truth of how milk is produced, that there would be more interest taken with every one, and there would be more fat and healthy cows. Now I will explain the process of how milk is produced. First, the food and every substance taken into the stomach makes the blood. The organs of digestion are as follows: The mouth, teeth tongue, glands, esophagus, stomach, duodenum, intestines, liver, spleen, pancreas and thoracic duct. The last is the largest of the absorbent system and the canal through which much of the chyle and lymph is conveyed to the blood. It begins by convergence and union of the lymphatic or the lumbar vertebræ below and in front of the spinal column; then it passes upward through the diaphragm to the lower part of the neck; then curves forward and downward, opening into subdivision vein near its junction near the jugular vein, which leads to the heart. Consequently we see how blood is produced. Then the blood produces every secretion, and every secretion is supplied with mineral and nutriment properties. As milk is a secretion and produced by the blood (and the truth is, nothing that produces milk but the blood), then how important it is to have pure blood in milch cows. Milk, when produced, is secreted in the lacteal glands of the female. These glands consist of numerous follicles, around an excretory duct, which unite with similar ducts coming from other places. By successive unions they form large branches called lacteferious ducts, which open from 20 to 30 minute orifices on the extremity of the lacteal glands. The most constituent of milk in a healthy, pure-blood animal is casine. It also contains oily saccharine substances. Now, of course, I am aware that this information is not new science, but there are millions of men, women and children who eat butter and drink milk from cows who never give it a single thought as to how milk is produced or where it comes from; so you see why I take the trouble to make this so plain to you. You will now see the necessity of feeding sound food to milch cows and of keeping their blood and secretions pure and healthy. Think

how many cows you see that are poor, scabby, and likely trace running sores all over their bodies; their hair falling off in big patches, and from every indication the blood is very impure and we might term it (excuse me) rotten. If you wish to see what you are taking into your own stomach for the blood to impregnate every organ with those poisons or impurities through the secretions, look at the milk from such a cow through a magnifying glass. I am sure that you will never use such milk again with a good appetite, if at all. Now you can better understand my Blood Tonic. Give one or two doses per day and you will be doubly paid for the time and money spent.

LESSON 71.

Texas or Splinic Fever. This disease, whoh has its origin in low lands of the Western States mostly (we have it in Florida sometimes), is very destructive and kill lots of cattle by being communicated from one field to another. The germs are killed by the first heavy frost and are only communicated to Northern cattle by cattle driven in there or shipped, being fed at the same place. The animals that take it this way do not transmit it to another. That shows it does not exist in climates where frost occurs. There is no danger of this disease breaking out where cattle are not permitted to pasture, even in summer. We have this disease a great deal in Texas. It was taken to Missouri by shipping cattle from Texas there, and the loss was very great to the native stock-raising men of Missouri—to those who pasture their cattle. The stage of incubation is from two to six weeks. The blood undergoes a change and some of its elements escape into the tissues of the body and into the urine, giving it a bloody appearance.

Diagnosis.—As in pneumonia, the temperature runs up to 104, or even 106; the pulse rises from normal to 75 or more. The fever is generally preceded by a chill; the dung and the urine become scant, high-colored or bloody; the milk fails rapidly (if in a cow); yellow water is seen to discharge from the mouth and nose; looks wild out of the eyes; the back is arched, the flanks become hollow, the gait staggering; the hair looks rough; the animal has a cough; the urine coagulates on boiling; the mucus membrane of the nose becomes yellow and the anus red. There is but little trace

of the disease in the first, second or third stomachs, but the fourth stomach shows congestion and the intestines are tinged with blood. The liver is not affected, but the gall bladder is filled with dark colored bile. The kidneys are also congested and the secretions in the bladder are stained with blood and the spleen is much affected and enlarged. In healthy cattle the spleen should weigh from one to one and a half pounds, but in cattle with this disease, the spleen has been known to weigh as much as seven or eight pounds; hence, we give it the name of splinic fever.

Treatment.—The animal should at once be put in a comfortable stall, well bedded, and receive good attention. Give following prescription every two hours until fever abates: Give immediately 18-oz. sulphate magnesia, dissolved in one quart of warm water.

F. E. Aconite, dr 1.
Gentian Rad F. E., 1 oz.
Amon. chl., 1 oz.
Potass. nit. 1 oz.
Mix. Give one ounce dose every hour.

LESSON 72.

Terms Used in Practice.—1. Acid? Ans. Sour. 2. Accelerate? Ans. Growing quicker or faster, as an accelerated pulse. Abscess? Ans. A swelling containing pus. 4. Ablactation? Ans. Weary from suckling. 5. Abortion? Ans. To lose the young before time. 6. Abcission? Cutting away or removing a part. 7. Absorb? Ans. Taking up or swallowed up. 8. Absorbent? Vessels which absorb or suck up, as the lymphatic glands. 9. Absorption? Ans. Taking up by the blood vessels of the body any substance. 10. Acardiatrophia? Ans. Atrophy or wasting of the heart. 11. Abrade? Ans. To wear away. 12. Abdomen? Ans. The portion of the body containing the stomach and the intestines. 13. Abnormal? Ans. That which is not natural. 14. Abomasum? Ans. The last, or fourth, stomach. 15. Actual? Ans. The production of an immediate effect. 16. Acenic? Ans. Strong growth of the liver. 17. Acrid? Ans. Sharp, irritating, or a strong acid. 18. Acute? Ans. Sharp, severe disease, those which soon come to an end, in contradistinction. 19. Albumen? Ans. Substance resembling the white of an egg. 20. Albu-

minuria? Ans. That condition in which the urine contains albumen. 21. Ailment? Ans. Solid or liquid substance. 22. Affluence? Ans. Delermative of blood to a part. 23. Alimentary canal? Ans. The bowels. 24. Affection? Ans. Disease of some part. 25. Alkali? Ans. Any substance that neutralizes an acid. 26. Etiology? Ans. Relating to the doctrine or cause of disease. 27. Alterative? Ans. A medicine changing the function of the body. 28. Aerate. Ans. Mixing with air, as the blood does in the lungs of all animals. 29. Alveoli? Ans. The sockets in the jaw bone where the teeth are fastened. 30. Axanrosis? Ans. Partial or total loss of sight from paralysis of the retina of the eye. 31. Adipose? Ans. Fatty matter. 32. Aubury? Ans. A soft spongy tumor. 33. Adhesive? Ans. That which adheres. 34. Adhesion? Ans. Joining together. 35. Anurism. Ans. Dilation of an artery on the heart. 36. Adermatrophy? Ans. Wasting of the skin (atrophy). 37. Analysis? Ans. Separating into parts. 38. Adenitis? Ans. Inflammation of a gland. 39. Ancholosis? Ans. The stiffening of a joint. 40. Antiseptic? Ans. Agents preventing putrifaction. 41. Aperient? Laxative medicine. 42. Anesthetic? Ans. That which deprives the animal of suffering, such as chloroform, ether, etc. 43. Apoplexy? Ans. Sudden affusion of the blood into the substance of the brain. 44. Anodyne? Ans. Medicine to allay pain. 45. Aqueous. Ans. Watery. 46. Antagonism? Ans. One contradicting another. 47. Anterior? Ans. In front. 48. Articulate? Ans. Joining together. 49. Anthelmintic? Ans. Medicine to expel or to kill worms. 50. Asthma? Ans. A disease which causes a difficulty in the breathing. 51. Anti-periodic? Ans. A medicine to prevent the return of the paroxysm in periodic diseases. 52. Astringent? That which causes contraction of the bowels. 53. Auricle? Ans. The external part of the ear. 54. Attenuate? Ans. To draw out, to make small. 5. Augment? Ans. To increase. 56. Ausculation? Ans. The act of listening to sound.

LESSON 73.

1. Vertigo? Ans. Dizziness. 2. Vesicle? A small blister. 3. Villi? Fine fibers. 4. Virus? Contagious matter. 5. Virulent? Dangerous. 6. Vision? The act of seeing. 7. Vital? Having or containing life. 8. Vivify? To bring to a

vital state. 9. Vulva? The outer opening of the female—the generative parts. 10. Wane? To decrease. 11. Warbles? Small, hard tumor. 12. Withers? The long part of the shoulder. 13. Windgalls? A distension of synovia membranes. 14. Uterus? A lay in which the young are carried before birth. 15. Suture? A stitch. 16. Sympathy? The connection existing between two or more organs. 17. Synovia? A fluid resembling the white of an egg. 18. Thorax? The chest. 19. Torsion? The act of twisting. 20. Trachea? The windpipe.

LESSON 74.

1. Diminution? Ans. The lessening or decreasing. 2. Confluent? Running together. 3. Dilute? To make thin. 4. Condiment? Substance used to flavor food. 5. Excresence? Unnatural. 6. Graminivorous? Feeding on grain or grass as feed. 6. Dilation? Expanding. 8. Florid? Red or scarlet. 9. Excrement? Refuse matter. 10. Concretion? Adherence of a part. 11. Contusion? Wound made by blow or bruise. 12. Fœtus? The young before its birth. 13. Fomentation? The application of warmth and moisture. 14. Friction? Exciting circulation. 15. Fumigate? Application of smoke or vapor. 16. Function? The office or duty of any part of the body. 17. Fundament? The anus. 18. Fungus? An unnatural growth. 19. Ganghorn? Nerve fibres. 20. Gangrene? Death of a part. 21. Gastric? Pertaining to the stomach. 22. Gastritis? Inflammation of the stomach. 23. Generate? To beget offspring. 24. Genital? Relating to production of young. 25. Gland? A structure of secreting. 26. Gestation? Being with young. 27. Gleet? Thin matter from an ulcer. 28. Glottis? The narrow opening at the top of the windpipe. 29. Gramivorous? Feeding on grass and other vegetables. 30. Diffuse? To extend or drive out. 31 Diarrhœa? Watery discharge from the bowels. 32. Diaphragm? The large flat muscle that divides the heart and lungs from the stomach and intestines. 33. Diaphoretic? A medicine which causes sweating. 34. Diagnosis? The distinction of one disease from another. 35. Diabetis? Excessive flow of the urine. 36. Develop? To increase. 37. Detergents? Medicines having the power of cleansing? 38. Desicate? To make dry. 39. Dermal? Belonging to the skin. 40. Depilatory? Any agent that causes

a loss of hair. 41. Dens? A tooth. 42. Delirium? Insanity. 43. Deleterious? Poisonous. 44. Degenerate? To become worse. 45. Defecation? Purifying from impurities. 46. Decompose? To decay. 47. Debility? Weakness. 48. Cystitis? Inflammation of the bladder. 49. Cystic duct? The duct which proceeds from the gall bladder.

LESSON 75.

1. Cyst? A small bladder. 2. Contorted? Twisted. 3. Chyme? The food modified and prepared by the stomach. 4. Contagious? A disease that may be communicated by breath or in contact with the body. 5. Constriction? Drawing or binding together. 6. Congestion? Clogged blood. 7. Cicatrice? Scar from a wound. 8. Conception? Fecundation by action of a male. 9. Comatose? Constant sleep. 10. Coma? Drowsiness produced by depression of the brain. 11. Coition? The act of copulation. 12. Colon? A large gut. 13. Collapse? Falling together. 14. Coagulate? To clot. 15. Castrate? To deprive of testicles. 16. Curb? A soft swelling. 17. Culdesac? A sac closed at one end. 18. Crusta? A scab. 19. Crisis? The point of a change. 20. Costa? A rib. 21. Corrugation? Contracting the skin into wrinkles. 22. Corrosive? That which eats away. 23. Copious? A discharge. 24. Convoluted? Rolled together. 25. Convalescent? Health after sicknes. 26. Chronic? Lingering, long standing. 27. Castrate? To geld. 28. Chronditis? Inammflation of a cartilege. 29. Chyle? Bile. 30. Chalybeate? Any medicine that contains iron. 31. Cerebral? Pertaining to the brain. 32. Caustic? Any medicine that burns. 33. Cathartic? Purgative medicine. 34. Cataplasm? A poultice. 35. Carotid canal? A canal through which the carotid artery passes. 36. Caraminitive? Medicine which warms or stimulates. 37. Capsule? A sack or membranous bag. 38. Capsular ligament? A ligament that surrounds a joint. 39. Capillary? Hair like. 40. Callous? A hard deposit, bony.

LESSON 76.

Fractures of the Bones.—There are three kinds of fractures: simple, compound, and complex. In simple fracture the bone is broken without any complications. In compound the ends of the bones push through the flesh and

protrude. In complex the bone is shattered in several pieces.

How to Test for Broken Limbs.—You can tell by the unnatural position of the limb, the way it hangs, by the grating of the bones upon one another when the parts are moved. As a rule, bones are more easily repaired in cattle than horses, owing to the cattle being more quiet.

How to Treat a Fracture.—Place the bones as near together as possible, and prepare a plaster made of plaster of paris. Make the plaster by applying water until you have a thin paste. Then apply the bandage, say, about six or eight feet long; then, holding the bones to place, go round and round the limb (as taught you in lesson), until your bandage is all taken up. Make sling (as cut shown on another page), and swing the animal before you undertake to apply the bandage. Let bandage stay on about 30 days, and keep in swing about six weeks. Feed on soft feed and keep bowels well open. Compound fractures are nearly always fatal; or if broken in a joint where the synovial fluid is allowed to leak out, it will leave the joint stiff. My advice would be to kill the animal in a case like that.

LESSON 77.

Teeth and Wolf Teeth.—Wolf teeth are small teeth. They come out just in front of the molar teeth above. Some think they affect the nerve, some think they cause enlargements on the head, and some think they cause gleeting at the nose; some one thing and some another, commonly called blind teeth; but let me say right here that they never cause any serious trouble. They do not form abscesses; they do not cause big head, neither do they interfere with the mastication of food. When there is a knot on the head, it is caused from a molar tooth, or else it is caused from a kick or hurt of some kind. Most all horses have these teeth, but most of them lose them out while eating, and should the knot or enlargement be found on the head (no matter what the cause), and teeth be found in the mouth, why, then, of course, the blind teeth are the cause of it. Now, remember what I have said on this subject, and don't be led to believe that these teeth (called blind teeth) cause any trouble whatever. Horses very often have toothache. How to know it: It will be noticed by the horse holding

his head to one side while drinking or eating. We also have teeth with ulcers on the root, just like a man. We detect this with a tooth sound or a little hammer. When you tap on the tooth that is affected, he will give way to pain. A discharge from a tooth is often taken for nasal gleet, and sometimes for glanders, by those that know nothing regarding stoc, and let me tell you right here, they are few and far between who know anything about the diseases of stock. Lots of men are good judges of horses, but know nothing about the diagnosis of a disease. They are excusable, however, for they have never been taught anything on this line. Sometimes when the lower teeth are ulcerated, it will break out at the lower part of the jaw, and sometimes at the root of the tongue, and the odor is just awful to smell. Sometimes a tooth gets broken off or pulled out, and the one above (if it be a lower tooth out), will extend up until it cuts the gum, and even prevents the proper mastication of food, and causes the horse to suffer a great deal, and even cause death—if not directly, indirectly. Such teeth should be removed. Uneven teeth very often lacerate the mouth and cause much trouble. All such teeth, if sound, should be dressed down smooth by the use of a tooth rasp, and if decayed they should be pulled out. We have other horses that have a mouth called parrot mouth. This is where the upper nippers protrude over the under ones, or the under ones come in front of the upper ones. Such teeth should be kept cut off to keep from lacerating the gums. You should never let a colt's tooth stay in the mouth long enough to cause the gums to get inflamed.

AGE OF HORSES FROM 3 TO 21.

At 3 years old he has four matured adult teeth, two in center above and below. At 4 years, he has eight, four above and below. At 5 years he has 12, six above and below, called nippers ; and all these teeth have dark cavities in the center, called cups. At 6 years old the cups in two center teeth in lower jaw wear out. At 7, next two, one on either side of first two, wear out. At 8 all cups wear out in lower jaw. At 9, cups in center teeth above wear out. At 10, next two wear out, on each side of first two. At 11, cups in corner teeth above half wear out. At 12 all wear out, or you find

them worn as much as you will ever see them. At 13 a groove starts, as you see in cut, down on outside and in center of corner teeth above, and you find it comes one-eighth the length of tooth each year until 21 years old, then you find the groove has reached the lower end of the tooth.

LESSON 78.

Teeth of Cattle.—The calf is very often born with nippers, or they will show in nine or ten days from birth—I mean two nippers. About 20 or 25 days the second nippers will appear—the ones next to the middle ones; about 30 to 35 days the corners appear, and then he has all the nippers. In about 20 to 24 months he will shed the two center teeth. At 3 1-2 years the corners shed. From five to 6 years the teeth are full and round. From 7 to 8 we will find the nippers worn, and from 8 to 10 you will find the corners worn. From 11 to 13 the teeth are short and wide apart, so there is no use in letting a man put an old cow on you for a young one, no matter if she is dehorned. (This is done very often to deceive the people.)

LESSON 79.

Retention of the Urine.—This is when the urine can't pass, and we call it retention of the urine. It is caused from inflammation of the neck of the bladder, diuretic medicines, etc.

Symptoms.—The animal will show colicy pains, try to urinate, and sometimes small quantities of matter will pass, and other times blood. It will have fever, respiration, and pulse quick, very tender if you press just in front of the pelvis bone. The bladder is tender to the touch. If you examine the bladder per the rectum, on pressure you will find it very sore and tender. If there is a stone in the bladder it can be felt by inserting the hand in the rectum.

Treatment.—Remove the cause if possible; give plenty of soft feed, giving no hay or hard feed of any kind for several days. (See catheter on another page.) Wash out the bladder good by inserting a catheter. Use bichloride and warm water, about 1 to 1000. After you have done this, keep the kidneys well regulated by giving two drs. acetate of potash once a day. Also give ounce of nitro muriatic acid, 25 gtts., three times in drinking water.

LESSON 80.

Tuberculosis in Cattle.—Causes: From absorption of poisons into the system, the poison locating itself in the form of sores or tumors. The tumors vary in size from the size of a buckshot to the size of a goose egg. These tumors may be found in the peritoneum, on the diaphragm, liver, kidneys, etc. The flesh of such animals is unfit for food, yet they are eaten by many who know nothing about such being the case. The muscles will be found pale and soft. Some say it is hereditary. I sometimes think myself that it is, for I have seen sucking calves with it, and when examined after death, have found them full of tubercular tumors.

Diagnosis.—Loss of appetite; the hair looks rough; dull cough; she does not lick herself; the skin is yellow. she falls off in flesh very rapidly; the cough grows worse; diarrhœa nearly always follows; pain when the sides are pressed on. Stands on feet almost the entire time, and sometimes you will see breaking out on the body.

Treatment.—Apply mustard plasted to the chest repeatedly, and give oils, soft food, linseed meal; avoid grasses and hay or hard food of any kind. In first stage they may be fattened and killed for beef, but in the third stage I would advise you not to kill for beef. The flesh is unfit for food even in the second stage. Remember to always keep the bowels open and give all the pure, fresh water he wants to drink. You may give the following prescription: Ferri sulph. ex., 2 oz.; Gentian, 3 oz.; Quin. Sulph., 1-2 ox. Mix Ft. Chart No. 12. Sig. One powd, three times a day.

LESSON 81.

Spaying Cattle.—The best age to spay heifers is from 18 months to 2 years old. Deprive them of any kind of food for forty-eight hours, also water. To prepare her for operation, first throw her on her left side, stretch her hind feet far behind her and bring her fore feet to body and fasten to circingle. Then shave off hair on right side just below last short rib. Now you are ready to use the knife. Make an incision parallel with the way the hair runs, about six inches long. You can put in a chute and operate without throwing. Now pass your hand in and when you come

to the peritoneum wall, gently push through, using your index finger for ag uide. After you are through the wall you will feel for the womb; follow it up until you come ot the fork (you will find the womb forked), then follow up the right or left prong until you come to the ovary. Now draw this out and twist it off. Don't cut, as it will cause bleeding. (See spaying instrument on another page.) The next step is to sew up the wound. First, sew up the internal wound with catgut, using some kind of antiseptic on your hands and instruments. Carbolic acid is good or bichloride of mercury, 1 to 1000. Be careful not to get any hairs on the inside of the animal, as it will cause trouble. Feed on light food for a few days, and all is right. Don't forget that any one who can spay a hog can spay a heifer.

LESSON 82.

Inflammation of the Brain.—Inflammation may come on from fever. We have it mostly in warm weather, say, in the summer months, the principal cause being too free flow of blood to the brain. This causes increased action in all the circulatory vessels.

Diagnosis.—There will be strong pulsations of the lingual arterise. The eyes are red, and sometimes the animal will fall, but generally rise again. There wil be trembling of the muscles, and the urine will be highly colored and hot. There will be a grating of the teeth. Sometimes it is caused by impactions of the bowels.

Treatment.—Give a good purgative when you first make the diagnosis. Use prescription No. 89. Calomel, 1 dr.; Oleum Tiglitt, 20 Gtt.; Linseed Oil, O. I. Mixe and give at one dose. Give injection of warm soapsuds water; then give No. 98 as directed.

LESSON 83.

Septicemia in Cattle (Commonly called Milk Fever).—This is caused from absorption of pus, or is caused by letting a cow carry the after-birth too long, and she absorbs poison. (Septicemia, a poïsoning of the blood.) After 48 hours, if a cow does not clean herself (throw off the after-birth), she should be attended to. First, grease your hand and arm well with lard, secure the cow and gently insert your hand in the vagina—this will be easily done;

then insert your fingers in the womb in a funnel shape and work slowly and with caution until in the womb. Now you may find the womb fastened to the cotylegeons—these are little knots that are found in the womb and sometimes enlarge to the size of a hen egg, or larger. Be careful in getting the after-birth from these, for if you tear one there may be a hemorrhage.

Diagnosis.—You will know this by the staring look, by the fast breathing, by loss of appetie. When you have removed the after-birth, wash out the parts well with warm water, 1 gallon; carbolic acid, 1 dr. Repeat this every day for a week or more, if you think the case requires it. Use prescription No. 90. Sulphate Magnesia, 20 oz.; Aqua, warm, 0.2. Mix and give at once, and after six hours follow up with No. 6.

LESSON 84.

Punctured Feet, Nail Pricks, Etc.—These are often serious evils, either when received by nails in shoeing or by one accidentally picked up in the road. The danger arises from inflammation, which is always great from any injury done to the sensitive part of the foot. This inflammation quickly proceeds to suppuration and the matter makes its way upwards, unless it finds an opening below. When it does not break out at the coronet, it will often penetrate under the sole, the bones, the ligaments and the cartileges become diseased and produce quittor. It is very often that a horse is pricked in shoeing. The smith is most times aware of it and will remove the nail. In all cases the nail must be withdrawn, and unless the puncture was severe will need no further attention, only to pour about one tablespoonful of the Favorite Liniment on wound. If the prick brings blood, the shoe and nails should be withdrawn and the hole bored out (as taught you on foot), packed full of oakum or absorbent cotton and use Hoof Tonic (No. 51) in wound three or four times a day. Remember, any puncture (no matter how or what with), must be bored out funnel-shape to bottom of wound and pack as above directed; feed on soft food, keep bowels well open, and in a few days he is well. Delay and neglect in cases of this kind very often lead to tetanus, and death many times is the result.

Nine cases out of every ten of lockjaw is caused from nail wonuds. (See lockjaw.)

Quittor.—This is a disease of the feet (comes between hoof and hair), and consist of a discharge of matter at the coronet, produced by a calk, or over-reaching, or by a blow on the soft part of foot while shoeing. Quittor is sometimes caused by a gravel getting in a nail hole or wound in bottom of foot and working up. This causes a separation from the sensitive part of the foot from non-sensitive, leaving a cavity from the bottom of the foot to the coronet. Then gravel generally lodges about the union of the flesh and foot, inflames and produces an abscess. In some cases, and particularly when the wound is beneath the crust, pipes or sinews are formed, as in fitula, from which the matter is thrown out. The most favorable case is when the matter breaks out at the coronet, soon after the lameness is perecived, but either the horseshoer is careless in his examination of the foot, or no lameness has been noticed until the matter has carried itself in every direction and has insinuated itself under the cartilage of the oscornea and ospedis. If the matter has penetrated deep among the sinews and cartilages of the foot the case will be difficult; if it has found its way into the ojint of the ospedis and oscornea, a cure is impossible. The probe must be used to discover the direction and extent of the disease. If the sinews run backward you have a chance of success; but if they run forward your examination must be more careful, and the chances for a cure will be less. A knowledge of the anatomy of the foot in this case is very necessary.

Treatment.—The first thing will be the probe, a long, blunt-pointed instrument. This helps to locate the depth of the wound and will assist in removing the matter from the orifice. Here is where knowing the anatomy of the parts come in with great advantage, so you can use the knife accurately. Open up the wound to the bottom and inject No. 104 as directed.

LESSON 85.

Scratches.—This is inaflmmation of the skin of the heels. It affects all the feet, but sometimes one foot may be affected, and is caused from negligence and mismanagement of the owner. Everything that has a tendency to

skin with hypodermic needle. If glandered, the temperature will run up to 106 or 107, and hardly ever excite inaflmmation of the skin of the heels is caused from improper treatment of the foot. Here are a few things that will cause it: Not giving him proper exercise, want of cleanliness in the stable. Filth of any kind will cause it.

Treatment.—Wash the heels good with aq uart of warm water, with two teaspoonsful of carbolic acid. Remove as much of the scurf as possible without irritating the skin; then apply No. 103 as directed. Thus you effect a cure.

Corns in the Feet of Horses.—These are troublesome ailments to which horses are very liable, and which injure and ruin thousands of horses; They are the results of improper shoeing, letting the shoes rest on the sensitive part of the foot, letting the shoe stay on too long. It is not the non-sensitive sole of the foot that is bruised; it is the inner sole. That is why a slight infusion of blood takes place. If not immediately treated the part becomes habitually defective, and instead of forming a healthy hoof, it forms a spongy substance of great sensibility, which ever after produces pain and lameness when exposed to pressure.

Treatment.—The diseased part must be carefully pared out (funnel shape, as taught you in private lesson on fott); then have a wide and thick shoe made, flaring out the shoe funnel-shape same as foot. Then take the bearing off the corn; then pack onening full of oakum and use No. 122 as directed. This will cure the worst case of corns.

Splint.—This comes on the small metatarsal of horses' fore or hind leg—those little bones that run three-fourths down the leg between the knee and fetlock joint. They also go up and form part of the knee. Cause: The principal cause is from hitting with shoe when improperly shod. Of course, a kick on the bone would cause it. We know it by the bone becoming enlarged.

Treatment.—In mild cases use No. 8 as directed, but if bad case and bone very much affected, fire the parts as in bone spavin.

Spring Halt.—In the horse, involuntary, spasmodic contractions of muscles of one or both hind legs. Cannot give any definite reason why these muscles are affected in

this way. Young horses, especially mules, are more subject to it than horses.

Treatment.—Give No. 37 and turn to pasture. Most young horses with this treatment will outgrow it, but old horses seldom ever get over it.

LESSON 86.

Pumiced Feet in Horses.—Cause of lameness. Is neglect of founder. The elasticity of the laminea being destroyed (generally by improper trimming by horseshoer). This weakens the wall, and the ospedis gives down, resting on the sole of the foot, causing it to give away and the bottom become diseased by the secretion being cut off.

Treatment.—Trim the foot down to natural length and shoe with a rubber shoe, as taught you in lesson on the foot. Pack under the shoe with oakum and use No. 51 once per day as directed.

Thrush of the Frog.—This is where the frog becomes very offensive; matter will be found imbedded in little holes. Cause: From standing in unclean stables, not cleaning out the foot as often as it should be. As any one knows what thrush is, I will only give treatment.

Treatment.—Apply No. 51 to affected parts twice per day.

P. S.—You may dust a little calomel on parts about once per day for five days.

LESSON 87.

Tread or Bruised Coronet. — The coronet of the foot is the top of the hoof where the hoof and hair unite. This part of the hoof is much thinner than the other part of the wall. This part of the foot becomes bruised by stepping on it with opposite foot (or shoe), getting kicks sometimes by other animals, falling through holes in bridges and receiving injuries to coronet, when trying to relieve themselves; in fact, in many ways they can receive injury of the coronet.

Treatment.—Use medicated fomentations and apply No. 105 as directed.

LESSON 88.

Black Leg.—This disease is known by many names, and is a bad one. Some call it inflammation fever. This

is a very appropriate name. This disease attacks cattle that are fat, mostly. The animal may appear perfectly well to-day, and to-morrow, his head extended, his nose dry, his breath hot, his pulse quick and his eyes protruded. He may utter low moans and at times appear to be unconscious. If he moves, there is a staggering gait, and at times he will appear to suffer with one hind leg more than the other. He will be dull and drowsy a day or two before the attack. Always swelling about the hind legs. There are two forms of Black Quarter or Black Leg: First anthrax, visible enlargement. When he dies, where there is no swelling there are no symptoms, only a very high fever. I believe there is always congestion in the quarters when there is lameness, and thus non-circulation causes the sloughing of the muscles, although this is not so with every case. If from any cause the circulation is started up, the animal may recover. The tongue will be swollen a little ; the swelling may not start in the legs at first, but in some other muscle. The fever starts immediately after inocculation, and as the parts swell it gets cold, insensible, and in from six to twelve hours the skin will crepitate on pressure, due to the sulphurated hydrogen gas formed, which is positive proof of gangrene. Death will soon be the result. One of the first symptoms is, they will leave the herd and go to themselves; always loss of appetite. I have seen large chunks of flesh fall out of the legs before death would take place. Remember this disease is epidemic. The bacterium from infected pasture or water enters the body by wounds of the legs. Curatively, treatment very unsatisfactory after the case is fully developed. Free puncturing, and rubbing in my Favorite Liniment will save a few cases. Use prepared vaccine as a preventive; this is a preventive treatment. Try to find the cause and remove. Always burn the carcass that dies from this disease. If you do not burn, bury deep.

No 128.—Flatulent Colic Cure.—Ac. Hydrocyanic, 1-2 oz., Tr. ePppermint 2 dr., Salsoda 1-2 oz., F. E. Canibis Ind. 1 dr., Calicylic acid 2 dr., warm water 1-2 pt. Mix. Sig .Give every 25 minutes until relieved.

P. S.—If very restless give half ounce hydrate chlo. every 40 minutes until relieved. The above is the formula

used at laboratory in preparing Dr. Rutherford's Flatulent Colic Cure for the trade.

No. 129.—Carbolic 1 oz., warm water 1 gallon.

LESSON 89.

Glanders.—No cure for this disease at all when it is fully developed. This disease is contagious. If you have a horse that is thought to have glanders, I would not let him in with other stock. It is also dangerous for man to be around a glandered horse, especially if he has a sore about his hands. We can take it by inoculation, by absorption. I would not want to get near a horse with glanders without using some kind of antiseptic wash on my hands, say, carbolic acid, one-half ounce to half gallon warm water. Wash hands good before handling animal. How to tell: There will be a discharge at the nose, and it will be reddish. The temperature will be excited a little. May go to 103. The discharge from the nose will be thin, and drip from his nose like water, and the mucus membrane will turn a dark lead color. The discharge, when taken between your fingers, will feel sticky. After a few days the discharge will become colored—"amber color." The glands may swell a little. He is inclined to rub his nose against the fence or stall. There are numbers of cases of men on record that died from glanders. Two I know in person. So be careful and take no chance. Don't let him blow his breath in your face, or be around him with sores and cuts on your hands.

Another way to decide is to take mallien. It is made from the bacilli mallei. Inject about 20 drops in the side of neck, about half way between the head and shoulders, on side of neck. Inject just under the return to normal again. If glander, will swell at the point where medicine was injected to the size of your fist or larger. If it does not swell you have no glanders. So, you see, you can't mistake this disease. Burn all carcasses, and also stable where horse has been with this disease. A horse may take this disease weeks, even months, after a horse has been removed from the stable, unless it has been washed with bichloride of mercury solution, or something of the kind. Whitewashed with lime will do. But best to burn, as above stated.

GRAVEL.

Cause.—The alakli in the urine has become deranged, lost its neutralizing power; consequently we have this disease. It should be called gravel in stem of bladder, literally speaking. There is a kind of sediment which collects in the stem of the bladder after the alkali has become inactive, which obstructs to some extent the free passage of the urine. This is a very uncommon disease and very horses ever die with it.

Diagnosis.—Horse lays down, rolls about a little, gets up and stretches out in a position to urinate, walks around, stopping every few minutes in this way; you find his pulse regular and will not run very high. No other disease has these symptoms, therefore you can easily diagnose it.

Treatment.—Never give saltpeter, as most people would recommend. It leaves the urinary organs in an inflammatory condition. Give the following prescription and you will give relief every time: No. 55.

EXPLANATION OF FOUNDER.

There are so many who profess to know what this disease is (you may here appreciate an explanation), and, properly speaking, they know nothing; therefore I will give a proper delineation. There is no such thing as water or grain founder alone, can't have one without the other; in other words, we must have both to produce founder proper. It is caused by the food fermenting in the stomach, and as a horse has no gall bladedr (which is a bag for the bile secretions and is used in the digestion of food, therefore, when digestion stops, founder is the result. Though it is impossible to produce it as long as the blood is pure, because as long as the blood is in proper condition digestion is all right. When fermentation takes place the blood stops circulating in the legs (in the pater veins of the legs), then his legs are cold and stiff, he can scarcely walk. Now, as we have two kinds of founder, I will take up the first and give treatment, etc.

Cause.—By the way I have ujst described, although different from chronic founder in treatment.

Diagnosis.—He never gets down and rolls about. I will explain here, if he gets down when founder comes on him,

he can't get up, etc., but it is a very rare thing to find one so. His legs are stiff, and if he step at all, he walks like he was walking on sharp pins. His pulse is very hard and regular; thus you mak know it invariably.

Treatment.—Must not have any grain of any kind for five days; anything else you can give him. Only one gallon of water the first day, two gallons second day, three gallons third day, four gallons fourth day, five gallons fifth day, etc. You can give him usual treatment from that time on. Now be sure you comply with this treatment to the letter, because keeping him from grain and water is half the treatment. You first bleed him in the plater veins, in fore leg only, just below the knee, and castor wart on inside of leg; take one quart from each leg. Hold him still while bleeding, after which let him walk about or do as he pleases; will be all right in a few days.

CHRONIC FOUNDER.

Cause.—This is the resut of the acute when not cured up as it should be, otherwise it all settles in the feet; causes, in severe cases, the whole hoof to come off if it doesn't get the proper attention.

Diagnosis.—Never gets down, limbs not stiff, very tender on their feet; he goes crippling along something like the acute founder; he is able to do ordinary work, such as plowing in soft ground, etc.

Treatment.—As most of the disease is in the feet, we must treat them. It will take you from ten days to four months to cure this founder, according to the length of time he has been foundered. Refer to prescriptions and you will find one called "Hoof Tonic." Trim out the foot good in the bottom and use this in there by pouring in as much as a large tablespoonful twice per day, night and morning. Continue as long as you think necessary. This hoof liquid is one of the finest preparations known to the people of the present day to take the soreness and restore the horny crest to health. Give as an internal physic one large tablespoonful of pulverized alum once per day in a little meal or bran or anything, just so you get it down .Contiue this as long as you treat the foot. We use the alum to strengthen his digestive organs.

SKETCH ON LIVE HORSE LESSON.

The following will be the points and information given you in Lesson on Live Horse, and it is utterly impossible for me to lay down in print for you to fully understand it unless you have retained to some extent what you saw and heard in that lesson.

WORMY HORSES.

How to Tell.—Raise the upper lip of the animal, and if he is wormy you will find little worms or blackheads in the lip. This is a sure sign.

Treatment.—Give prescription No. 56.

LAMPERS.

All young horses have them, more or less, caused by shedding and teething. Old horses have neuralgia, toothache, etc. It is very much against the health of the horse; he can't bit his food, consequently when he eats grain it passes out half digested.

Treatment.—Scarify the gums, as taught you, and use coarse salt to rub them with. Operate once every other morning for three times and use salt as directed.

HOOKS IN EYE—SO-CALLED.

This is inflammation in the eye. The secretion which is commonly called tears, like all secretions, is produced by the blood. If the blood is impure, the secretions, of course, are impure; consequently you have this inflammation which causes the little fatted bay properly called the "haw," in the corner of the eye, to swell and somewhat protrude or stick out. You must never be so ignorant as to be cutting this out—nothing in the eye which needs cutting out.

Treatment. — Puncture below the eye, and use my Favorite Liniment night and morning for ten days. You must operate below the eye every three days during the treatment. The treatment is to draw the inammflation from the eyes, etc. Now, as the blood is impure, you must give the prescription called Blood Tonic, No. 37, according to directions, as long as you treat the eye, etc. By this process you cure all the inflamed eyes.

WEEPING EYES.

This is caused by hayseeds or motes getting in the lach-

rymal canal, which is the passage for the tears. Treatment: Pull off the little scab you find on the mouth of this canal in the nose and blow one teaspoonful of pulverized ginger up his nostrils, and in a few minutes all is well.

CUTTING OFF WARTS.

If you find them on any part of the animal, cut them off close to the skin and use the wart extractor (No. 38), which you will find in the prescriptions, just as soon as you cut off, and continue as directed. You must not let this get on the hands if you don't wish to get hurt. Apply to wart by a little mop—rag on stick.

STRAIN ON STIFLE JOINT.

Puncture the parts only one time, and use No. 59 Strain Liniment in prescriptions. Use a large spoonful at a time, night and morning, and continue for 10 days or longer, if you think the case requires. It sometimes takes a little longer to cure a bad case.

STRAIN OR WHIRLBONE JOINT.

Puncture the parts, and apply Liniment No. 59, one operation only. Use liniment night and morning for seven days; thus you effect a cure.

P. S.—In treating any strain or joints or lameness otherwise, always let your animal stand in the lot during the treatment.

BLOOD SPAVIN.

Caused by pulling and straining your animal too hard, which ruptures one of the coatings of the large subcutaneous veins which passes down the inside of hind leg.

Cure.—By splitting one inch long on each side of vein, and one inch from vein, as taught you, only split the skin; rub out blood and put on large sponge and compress. Make compress out of wide suspender by sewing the edges together; thus you make it broad enough to cover all the front portion of the hind knee. Make draw strings so you can lace it up, thus you cure it without any medicine by putting on the sponge and compress. Let it stay on four days. Notice you don't put on too tightly and stop the circulation of the blood.

MONO-EYED—SO-CALLED—OPHTHALMA.

The cause of this disease no veterinarian has been able to tell. The animal seems to have periodical spells of blindness; he becomes so about every change of the moon; consequently we have the name of the disease—moon-eyed. It will take you three months to cure this disease. Find out what days he goes blind, or nearest so, then puncture below the eye, as taught you, twelve days before his blind period comes on, and use my Favorite Liniment, No. 59, on the parts you have punctured, night and morning, for twelve days, then let alone till next month, and then go through the same operation and treatment; that is, twelve days before blind period, etc., as you did before; operate and treat. Now, you will not see much change until the second month, but if you will follow this treatment you will cure every case.

HOW TO UNCHOKE STOCK.

Take a buggy whip (don't use large end), five feet long, or some other flexible substance, grease it well and make a mop on the little end of it with rags; open the animal's mouth, hold the head straight from the body and pass the whip down the throat. Put a little block in corner of mouth to keep it open. By this process you can push the object into the stomach.

P. S.—Don't use cheap whip—best that can be had.

The following diseases, "Thick Wind" and "Heaves," are mostly dreaded in buying and trading.

This disease is sometimes called "Wind-broken." It is caused by becoming overheated by hard driving, which causes a rupture of the air cells of the lungs. Thus we have the disease. No cure at all for this disease. You must remember what I told you in lesson on Live Horse regarding these last four, as I can't lay it down here for you to understand. You detect this disease externally by the sides going in and out like bellows, but cannot detect it in this way if he has been given something "to patch him up," as the jockeys call it. But if you only put your ear against his breast you may detect this at any time; you will hear a rattling, harsh sound. This is an infallible sign. If you hear this, you may be sure he has the heaves.

P. S.—If you want to cheat and defraud some one, I here give you a remedy to patch up a horse with this disease. Give No. 39. "The devil will get you if you do this."

THICK WIND.

You know this by his hard breathing when you are driving the animal. You may know it also by examination of the larynx of the throat. If you find some little hard kernels on each side you may know he is thick-winded. This never hurts a horse. He is just as valuable. The sound he makes is very disagreeable when driving. Caused principally from bad cases of distemper being neglected and allowed to run on the animal without any treatment. No cure for it, nor much objection, in my estimation, so far as diminishing his value is concerned.

DISTEMPER.

This is caused from cold settling on the nasal glands, which produces an inflammation, thus causing the discharge of gleet at the nostril. No cure for this, but you may put pine tar and F. E. Lobelia, equal parts, in false nostrils with a little mop (rag on stick); smear about the box so he will continually inhale it, and thus keep it from becoming so bad. This disease must run its course and finally gets well itself, unless the case is a very bad one, and begins to swell coniderably about the head and throat, which sometimes kills if it doesn't get the proper treatment. Give no dry food. When the animal swells under the throat you must lance the parts. Guage your knife blade one inch and gently push into theswallen parts. Thus you let out the pus, and he soon gets well. Bathe parts with Favorite Liniment three or four times a day if swollen, until swelling subsides, and give internally No. 37. Keep this up until well; also keep away from other horses; also use No. 110 as directed.

IRIS OF THE EYE.

You know this by a pink ring around the eye; much inammafltion; eyelids partly closed. This is your remedy: Attropine Sulphate, 2 gr.; water, 1 oz, Mix. Apply four to six times per day with soft rag until inflammation is gone.

HEAVES, SECOND.

I have been teaching for ten years that heaves is a rup-

ture of the air cells of the lungs, and incurable. I so instruct in another part of this book. We admit it is a rupture, and brought on principally by over-driving. But I have been experimenting on this disease for the past two years, and am glad to say that my labor has not been entirely in vain. I here lay you down a recipe with which I have permanently cured sever cases, in first stages only, mind you. I have utterly failed on others in second and third stages. Accept it for what it is worth.

Barbadoes Aloes, 1 1-2 ounces; Chloride of Potassa, 2 ounces; Nitrate of Potassa, 2 ounces; Tartarized Antimony, 6 dr.; Gentian, 2 dr.; Nux Vomica, 3 dr. Mix thoroughly and divide into 12 powders and give one per day in ground food. If he will not eat, put powder in pint of water and drench him. Some eat it nicely. It may be necessary to repeat this whole recipe twice more before you can cure. All depends on the advanced condition of the disease .

FOALING MARE OR COW.

Should she not foal after being in labor for 24 hours you should assist her. If young can't pass out, something is wrong. Grease your arm well up to the shoulder with lard, and pass in your arm and examine. The young should come with nose and fore feet into passage. Any other way is mal presentation. If the fœtus is not coming right, you must turn him about until he is right. Loop lines around legs above hoof will assist you much. When you have both front limbs and head in the passage, you may pull all you wish. It will sometimes take three or four men to pull one away. But under no consideration ever attempt to pull or force one that is not in the passage as above described. If the young is dead, or you can't deliver him alive, you may cut him to pieces on inside and remove piece by piece. At least you can open the bowels and take them out; anything to diminish the size. When young is delivered, inject following into her womb three times per day: Carbolic acid, 2 dr.; water, 1 pt. She will throw this out herself. Feed on soft food, and she is all right.

HIDEBONUD.

Give recipe for fattening stock (No. 40) on another page.

CURB.

This is a bump or soft knot which comes only on back part of the hind leg a little below the knee or hock.

This is caused from a strain of some kind.

Treatment.—Puncture this bunch all over only skin deep and apply No. 59, found on another page.

THOROUGHPINS.

This is a soft, puffy enlargement which comes above the hock and under the ha mstring on hind legs only. Treat as for curbs.

STUMP SUCKER.

Saw between teeth, as taught you, separating all the teeth down to the gums. You sometimes fail to stop them; but this will work on the majority. Use a small saw made of a steel case knife or something of the kind. Saw alike both above and below.

BOTS.

Bots are in every horse, more or less, and never bore the stomach or eat it, as many believe. When you find holes in stomach it is caused from the gastric juices setting up a digestion of the parts, where gangrene many times sets in before death comes on; and invariably these strong juices undergo a chemical change, destroy the mucus membrane of the stomach, and bots, food and all go through the openings. When your horse puts his head around to the side he has colic, or some other internal trouble. Never be guilty of giving bot remedies. Leave this to the ignorant and superstitious.

CARE OF JACKS AND STALLIONS.

The most essential is exercise. Give them daily exercise. They should never stay in the stable when it is possible to have them out running loose in a large lot. Next is feed. Many men, otherwise intelligent, burn out their males by giving them too much grain, especially corn. It is so stimulating that it keeps up too much animal heat.

Change his feed often. Next the water. Give him all he wants three times a day. If you observe these rules you will not have any large-jointed, weak-eyed and stiff-gaited jack or stud. Your colts will show up all right. They will not be scrawny, scabby or passing bloody urine by the time they are a week old or less. Remember that the remedies here apply in treatment to mules and jacks, as well as horses, such as proud flesh, swollen joints; in fact, all Best tonic for blood, No. 37.

WIND GALLS (SO-CALLED.)

These are not really wind-galls, but so-called. These soft puffs which come around ankles are the enlarged or expanded glands around the ojints which contain joint oil, instead of wind, etc. By puncturing and blistering, you can often remove them. Never cut into them; very injurious. Use liniment No. 59. Compress in bad case.

SITFAST.

Hard gristle in back or shoulder from pressure of saddle cover, etc. Cut out as taught you in live horse lesson. Dress with No. 24.

CASTRATION.

Best time for this is from six to eighteen months. The sooner the better. Only two secrets about this. Cast your colt, tie securely and you are ready for operation. Catch the whole bag between your thumb and forefinger of left hand, then you have two seed up, and press tight against bottom of bag. Now notice that you have the seam in the bag exactly between the two seed, then make an opening from middle of back seed (don't cut towards front) large enough to let seed pass out. Be sure now you let both seed out before you slack your left hand. I mean to let them them both out at once; then you can first operate on one, then the other. You are now ready to finish. Operate as taught you. Before you cut the cord, you tie with a strong silk cord about three inches above seed, or testicle, to prevent bleeding, then cut one-half inch below where you tie. Operate on the other side same as this. Notice in twenty-four hours after you cut and see if the blood clots in the bag cause swelling. Should any swelling arise from clotted blood collecting in parts, twtitch horse's nose and run your finger into

cuts in bag and clean out, then bathe in water as hot as you can stand. Do this for two or three mornings and swelling will all go down and your horse do well. Remember the two secrets in this, first cut from front to back end, never forward, letting seed pop through. The second point is tying the cord securely to prevent bleeding. Now can you do it? I think you can.

P. S.—In regard to this operation, I want to say that many plans are in use which have more or less virtue. Some cut and burn the end of cord to prevnt bleeding, and it is a very good plan if you know no better. Some cut and turn loose, neither burn nor tie cord. They lose many this way, too much bleeding. We surgeons all use the Ecraseur (an instrument made for the purpose); this prevents us from having to tie, but if you have not this you tie as I have taught. If you have ridglings (seed in belly) they have to be taken out at side or go through scrotum. The operation is dangerous; can only be done by a veterinary surgeon. Save them for me until I come around next time. Much success.

BLOODY URINE IN COLTS.

In suckling colts, caused by condition of mare's blood and digestion. Give mare my Blood Tonic, thus colt gets effect through milk. If weaned give colt the powders.

SCOURING—WATERY BOWELS.

Give a tablespoonful of Pulv. Alum once per day or drench in pint of water or in ground food. But if horse is weak and sick and showing colicy pains you should check his bowels at once by giving one-half ounce of Pulv. Alum every four hours till checked.

AFTER-BIRTH.

This is a gutlike string or sack which you see hanging from the mare or cow behind after giving birth to the young. If your cow does not pass this off in twenty-four hours from the time she calves, you must take it from her. By a bruise or hook it has grown to the insite of the wormb. Grease your arm to shoulder and pass in, holding to this part of after-birth with left hand and you can follow it down with your right hand. When you reach where it has adhered,

gently rip it loose and pull out. It's easy done. Wash out the womb with No. 129.

Mix and sponge the womb, put in this with your sponge or syringe, also bathe outside. This will be sufficient and you save the life of your cow or mare. Remember, this applies to mares also. Thousands of cows die every year just simply for want of a few minutes competent attention. Now, student, don't be backward or afraid to do this, for there is nothing in there to take out or misplace but this which is hangingfi out. When it allowed to remain in, it decomposes and sets up fever. This also is the principal cause why mares and cows won't breed. When they escape death the womb is so foul and nasty they will not breed. You can make them breed by cleansing as above.

HOLLOW-HORN—SO-CALLED.

There is really no such disease as this, like sweeny in horses, only the effect. When cold setles in the head it causes in bad cases the pith in the horn to perish, thus the horn becomes hollow. The disease is catarrh of the head and hollow-horn is the effect. In mild cases you can cure by cutting off hair in hollow of back of head, puncturing and pouring in 3 oz. of No. 59 three times a day, and at same time giving my Blood Tonic in two tablespoonful doses night and morning. In chronic cases saw off horns, if any, close to head, smear large amount of my screw worm recipe, bind up head in bandages to exclude air, turn her loose and keep up Tonic a few days and she is all right.

REMARKS.

Remember, I told you I could not make a veterinary surgeon of you in a few lectures, or to understand anything like all the diseases of animals. We have many diseases of cattle that are so complicated, and the diagnostic points are so faint that we surgeons, with all our college training, lessons in surgery, dissecting, and long years of daily experience, are at a loss, oftentimes, to give a correct diagnosis of a case.

JOCKEY TRICKS.

How to Make an Old Horse Look Young.—Take a sharp knife and cut a small hole, as large as the end of your little

finger, in the skin in sink over his eyes; put a quill in hole and blow in air till it puffs up full. Take a needle and thread and take a stitch where you cut him, which brings the edges together, and in one day and night it will grow up and you can take the stitches out, and he is all right. Makes him look ten years young. This will not remain longer than twenty days; trade him before time is up. Don't do this, but don't let others do you.

BLINDNESS IN A FEW DAYS.

Take beeswax, hard, trim to a point, push up the little hole in nose (lachrymal canal), where I showed you in lesson on live horse, and let remain 24 hours, and eyes will swell and leak hot tears on cheeks, and finally go out if you don't remove it; when you do remove it, the eyes are, within a few hours, all right. Some one may try to defraud you in this way.

MAKE HIM KICK AND NOT TOUCH HIM.

Pour on his back two spoonsful of bi-sulphide of carbon; then stand still a few minutes and let your hair grow. He will kick more than a "bay steer" as the saying goes.

TO KEEP A HORSE FROM EATING.

Grease his teeth with mutton tallow—his front ones only —all around on gums between teeth, etc. He will not eat a bit. Wash tallow off and he eats all right.

MOVING LIQUID.

Oil of Cloves, 1 oz.; Oil Anise Seed, 1 oz.; Tincture Asafœtida, 2 oz.; Oil Rosemary, 1 oz. Mix, shake well and give 15 drops once per day in bucket when you water horse. This will give life to all that is not dead. You will need no steels or buds; but, brother, you may need a rider. He may "spill" you. Stay with him and he trades well.

TO MAKE LAME OR FOUNDERED.

Thread a needle with a horse hair, run through big leader on the back of the forelegs about four inches above the fetlock, and cut off each end of hair about one-quarter inch from leg. He becomes so lame that he looks like in his movements he is badly foundered. Remove this and he goes all right.

TO GIVE HIM GLANDERS.

Pour half pint of melted butter in each of his ears. For next twenty-four hours he sloughs at nose, and to all appearance has the glanders. In a few days all sloughs out and he is all right. Remember live horse lesson.

TRADE RUPTURED MARE.

Fill the rupture full of powdered alum. This will cause parts to draw so tight she will not make any fuss.

HEAVE POWDER.

Spanish ifles, half pound; Ginger, half pound. Mix, give tablespoonful three times per day in water.

LESSON 90.

LECTURE ON THE TEETH.

Teeth are characterized by their hardness and density of their specific tissues. Like bone, these tissues consist of earth salts, with a basis of organic animal matter. They are harder than bone, which contains 67, while teeth contain 76.2 per cent of earthy salts.

Teeth vary in different classes of animals as to number, size, form, structure, position, mode of attainment, etc., but in all cases they are in co-relation with the food and generic habits of the animal. But I shall only speak of the two classes of animals that are the most liable to interest you, such as the horse and the ox.

The incisors, or front teeth, in the horse are twelve in number, six in each jaw, the upper six being the largest. The molars, or grinders, twenty-four in number, six on each side above and below, while in the stallion or gelding there are four canine teeth, or bridle teeth, which are absent in the mare as a general thing, but sometimes do appear, consequently in the stallion or gelding there are forty teeth, while the mare has only thirty-six, the four bridle teeth being absent.

The development of the teeth consists of three distinct stages. First, a papillary stage or nipple-like elevation, which, of course, is very small. Second, a follicular stage, which means a small depression. Thirdly, a sacular stage, which means that the teeth now resemble a small sack. About

the sixth week of fœtal life a depression is formed in the mucous membrans of the gums which is the primitive dental groove from the oflor of which arises these papilla that I have ujst spoken of, corresponding in number and constitution to the germs of the milk teeth. This is the papillary stage.

About the tenth week the groove deepens, the papilla enlarges, the margins of the groove thicken and become prominent, prolongations pass from one side of the groove to the other, enclosing each papilla in an open fallicle, or sack. This constitutes the fallicular stage; it terminates about the fourteenth week of fœtal life.

Small membranous processes now develop from the side of the fallicles which correspond in number and shape with the table surface of the teeth. The lips of the fallicles close and cohere and the grooves become obliterated. What were once open fallicles are converted into closed sacks, thus completing the secular stage.

The permanent teeth are developed like the temporary ones. As the permanent tooth continues to grow it gradually presses on the milk tooth and absorbs its roots until the entire fang, or root, is gone and the crown of the milk tooth falls out, or should do so at least, and the permanent tooth appears above the gums. The three back teeth on both sides, above and below, come in the same way, but come in as permanent teeth, consequently do not shed—a point every horse owner should remember, as very grave mistakes are sometimes made by the "would-like-to-be" veterinary dentist who does not know this point, and trying to remove what he supposed to be a cap of a milk tooth breaks off a sound molar which never can be replaced by another tooth.

The teeth are the means afforded us to tell the age of the animal, and one cannot study this important branch of veterinary science too closely, as sometimes very grave mistakes are made.

The colt should have at birth sixteen teeth, four incisors and twelve molars, but this depends a good deal on the time of gestation—that is to say, should the mare carry her foal eleven months or longer, then the colt will have at birth sixteen teeth, but should gestation only run ten months and a half, the colt then should be absent of teeth at birth, but they would soon appear. At nine weeks there will appear

four more incisors, and at nine months four more, which are the corner teeth. You will observe now that the colt at nine months has twelve incisors, six above and six below, which are milk teeth and subject to shed in the following manner: At two years and six months the first two teeth above and below come out and are replaced by permanent ones, which are up in wear at three years old. At three years and six months the next four appear in the same way, and are up in wear at four years old. At four years and six months the corner incisors, one on each side, come out and are replaced by permanent ones in same manner. So, you see, the horse at five years has a permanent set of incisors. Now we will go back to the molars. We have already stated that the colt at birth has twelve molars which are temporary, three on each side above and below, which are all the temporary molars he has. But at one year old the colt gets its permanent molar, which is its fourth grinder, one on each side above and below, and at two years old he gets his fifth molar. Now at two years and six months the colt sheds its first eight temporary teeth, two on each side above and below, which are replaced by permanent ones and are up in wear at three years old. At three years and six months the colt sheds its last four temporary teeth, which are the third molars, one on each side above and below, and at the same time cuts its last four permanent ones, which are its sixth molar. So at four years old the colt has a permanent set of molar teeth. The stallion or gelding has four bridle teeth, which make their appearance between the age of four and five, as a general thing, but sometimes even latert han this. The horse has forty teeth, but the mare has only thirty-six, the bridle teeth being absent. The front teeth are the ones ew go by to ascertain the animal's age, and this is done in the following manner: We have already stated that the horse has a permanent set of molars at four years old, and a permanent set of incisors at five years old. Now in each incisor, or front tooth, thre is a deep depression, or infundibulum, or cup, as it is generally called, which is absent at six years old in the two central incisors on the lower jaw. At seven years old the infundibulum, or cup, as it is generally called, in the two lateral teeth of the lower jaw. At nine, the depression in the two central incisors on the upper jaw dis-

appears. At ten, the two lateral, and at eleven the corner teeth also lose their depression. So at eleven years old the horse has lost its last cup, which takes place in the corner of the upper jaw notch, which generally get quite deep in very old animals. Although there are rules to ascertain the age of a horse pretty correctly up to twenty-five or even thirty years old, there is probably no one thing that causes so much controversy among horsemen as the age of the horse. I have seen a horse at four years old have a five-year-old mouth in appearance, and one at five years old have the appearance of a four-year-old. So, after carefully looking up the writings on the horse's age that have been hande down for the last three hundred years, and sixteen years of personal exjerience, examinging hundreds of mouths, from the new-born colt to the old and decrepit dying from senile decay, I am wiling to confess my ignorance in telling the horse's age accurately by the teeth, and will say, in conclusion, that the only accurate way that I have found is to find out when the animal was born and figure from that. I give you a diagram in another part of study, telling age from twelve to twenty-one years old.

I will now make a few remarks on the teeth of the ox. The ox at birth has four temproary incisors on the lower jaw. At about two weeks old two more make theid appearance, and at one month old two more appear, making eight incisors on the lower jaw, while the upper ajw has none; but instead of teeth the upper jaw is supplied by a cartilaginous pad. The teeth of the lower jaw all go through the process of sheding similar to that alread described in the horse. At one and one-half years old the first two milk teeth fall out and are replaced by permanent ones. At two and one-half years old the next two come out, which are the two first intermediates, and are replaced by permanent ones. At three and one-half years old the next two are shed, which are the second intermediates. And at four and one-half years old the corner teeth shed and the animal has a permanent set of incisors. We will now say a few words concerning the molar teeth of the ox, which are twenty-four in number, at birth only twelve, three on each side, above and below. These twelve are deciduous, which go through the process of shedding. The first permanent molar, which is the fourth

one, comes in when the calf is eight months old. The next one, which is the fifth, comes in at two and a half years old, and the last permanent molar makes its appearance at four and a half years old.

Now, the first temporary molar sheds at one and a half years and is replaced by a permanent one. The next, which is the second, is shed at three and a half years old and is replaced by a permanent tooth. tl is well for owners of cattle and teeth to understand something of the nature of teeth, as I have not infrequenly been called in to see a cow suffering from some trouble and loss of appetite as well, but the owner in making some examination previous to my arrival had discovered that the teeth in front were al loose on the under jaw and thought, of course, he had discoveerd the whole difficulty. And it is sometimes had to make them believe otherwise.

But this is not the result of a diseased condition, but nature constructed them this way so as not to injure the cartilagious pad, which takes the place of teeth on the upper ajw, with which they come in contact. The study of teeth can not be too deeply impressed on every owner of stock, as a great many lives are lost both among horses and cattle during their respective periods of dentition.

I have been called agreat many times to see a sick and debilitated colt, and on making inquiry as to the age of the animal would examine as to the teeth that ought to be shedding, and not infrequently find dentition to be the whole cause. And on removing the caps of the milk teeth the animal would at once show signs of relief.

Veterinary dentistry is a study of great importance and cannot be too highly esteemed. And I am only too sorry to say that there are hundreds of practicing veterinary dentists who do not know any more about the horse's mouth than the horse himself.

We will now look at some of the diseases of the teeth in the adult animal. The horse is subejct to split and broken teeth, which sometimes causes a festulous opening in the lower jaw and a constant discharge of pus of a very feted characted. To remove a tooth of this kind from the lower jaw it is always best to use the rimmer to enlarge the festulous opening so as to admit the punch, which is a small

instrument made for the purpose, and the tooth is then driven into the mouth with one sharp blow from a wooden mallet. This is not only a successful way to remove an ulcerated tooth, but allows exist of accumulated pus, and also allows an injection of an antiseptic medicine in case the bone has become diseased.

A discharge from the nose is not infrequently caused from an ulcerated tooth on the upper jaw. This is almost incredible to one not conversant with the anatomy of the horse's head, but as the teeth in the upper jaw are so long and are so deeply imbeded in the aveole and in close proximity to the nasal opening, with only a thin bony plate covered with a thin mumous membrane to separate the fangs of the tooth from the nostril, that when the tooth becomes diseased pus is formed and pressing on the thin bony plate absorbs it and allows exit of the occumulated pus through the nostril, which is one form of Nasal Gleet, and is sometimes mistaken for Glanders by the unexperienced and the animal destroyed. To remove a tooth of this kind the animal should be cast and a long tudinal incision is made through the skin down to the bone directly over the fang of the offending tooth and a piece of the bone is removed by trephine, an instrument made for the purpose. A punch is then placed on the root of the tooth, which is quickly removed by a sharp blow from the mallet. The parts are then dressed with an antiseptic dressing for a few days through the opening made by the trephine, but soon heals up, leaving no trace of the operation. When a tooth is removed from a horse's mouth, either mechanically or accidentally broken by some hard substance taken into the mouth by a food, the opposing one should be looked after every six months, as it continues to grow, and having nothing to come in contact with, it soon becomes elongated and protrudes into the mouth to such an extent as to wound the opposing jaw. A tooth of this kind should be cut off with a pair of tooth cutting forceps and then leveled up flat with the oflat.

TUBERCULOSIS.

Tuberculosis is a parasitic disease, which is both inoculable and infectious. To Villemin belongs the honor of having demonstrated its contagiousness (1865); to Robert Koch the honor of having isolated its microbe (1892), to

which has been given by common consent the name of the bacillus of Koch.

There is no disease in existence which attacks so many different kinds of animals. Not one of our domestic animals is completely refractory to it; they simply vary in their susceptibility, and those which under natural conditions escape infection are unable to withstand experimental inoculation. Our poultry yards even are often decimated by tuberculosis, and the tribute paid by man to it is so heavy that in aPris, according to the latest statistics, more than 23 per cent of the death were due to tuberculosis, and even this high percentage is exceeded in many European towns. Tuberculosis was known to the ancients—tuberculosis of cattle, at any rate. The phthisis of which Columella speaks is certainly our tuberculosis, for he refers to the ulceration of the lungs as its last stage.

Although all tuberculous lesions acknowledge the presence of the casual agent—the bacilus of Koch—nothing is more variable than their appearance. Sometimes they take the form of rounded granulations, hardly as big as millet seed, invading all the organs. Sometimes they are great fluctuating masses, filled with yellow pus, which is thick, grumous, full of calcareous grains, and resembles mortar. Sometimes the pleura or peritoneum are covered with hard, glistening, grayish-red, rounded new growth, with more or less long pedicles, and generally heaped together in clusters of variable size, so as to form genuine polypi, which sometimes attain considerable dimensions. Sometimes, again, the lesion consists of an opaque, grayish or yellowish matter infiltrating the tissues.

For a long time these varied lesions were though to be of a very different nature. Laennec was the first to recognize and proclaim their close relationship. The unity of tuberculosis is admitted everywhere to-day, but for long the idea was combatted by the school of Virchow, and the doctrine of Laennec, although defende by the remarkable work of Charcot, Grancher and Thaon, was abandoned until quite lately by the large maojrity of anatomo—pathologists and doctors. It was in vain that Villemin proved the identity of all these legions, inoculation into the rabbit or the guinea pig always giving the same results, whatever the inoculation product, whether sputum, tuberculosis nodule, or caseous

lung. The opposition only ceased on the day when Robert Koch showed that all these lesions, whatever their microspocical appearance or histological structure, were due to one, always identical mibroce.

Species of Animals Attacked.—Although tuberculosis can be transmitted to all the domestic animals by inoculation, it does not by any means, under natural conditions, cause equal ravages in each species. Cattle come first among its victims, the proportion attacked varying according to the locality. In same places the number of tuberculosis cattle is calculated at 10, 15 and 25 per cent of the whole. In other places the disease is unknown. Nevertheless one would be right in saying that bovine tuberculosis is the contagious disease which exacts the heaviest tribute from agriculture; and it is this form of tuberculosis alone at which French sanitary law takes aim, seeing that the other tuberculosis does not constitute a great danger either to property or to public health. Horses may be infected under the ordinary conditions of their keeping, and in the horse the disease appears to run a more rapid course and become generalized more easily than in the cow; but still one is justified in saying that equine tuberculosis, although the cases of it recorded up to date are fairly numerous, is an exceptional thing. Among the small ruminants the disease is much rarer still, the sheep and the goat being even markedly refractory to experimental inoculation. Tuberculosis of the pig is much rarer than that of cattle, but much more common than that of the horse, sheep or goat, and is, moreover, often generalized in all the organs. The domestic carnivora do not show a great susceptibility to tuberculosis. At any rate, they are very refractory to the different methods of experimental inoculation, with the exception of intravenous injection. Lately, however, a considerable number of instances of dogs becoming tuberculous owing to contract with phthisical people have been recorded. Kittens, too, are easily infected by the ingestion of tuberculous material, particularly milk. Among the birds of the poultry yard, fowls, pigeons, ducks, turkeys, pheasants, etc., the disease is very common, and often assumes an epidemic character. The rabbit and the guinea pig are very rarely tuberculous under natural conditions, but they are, especially the guinea pig, excellent re-agents for

the disease. In them it follows a much more rapid course than in the larger species of animals. This allows many experiments to be completed in a short time, and explains the considerable progress that has lately been made in the study of tuberculosis. The domestic animals of our countries are not the only ones attacked by tuberculosis. It has been found in the camel, both in Egypt and in Kirgheez steppes. Monkeys kept in the different zoological gardens dis tuberculous almost to a certainty. Giraffes, antelopes, llamas, gazelles, ezbus, etc., in zoological gardens are also decimated by the disease. Finally, we have authentic records of tuberculosis in the lion, the tiger, the jaguar, the panther, the fox, the jackal, the tapir, the zebra, etc.

We will first study tuberculosis of cattle, and afterwards point out the features peculiar to tuberculosis of the other domestic animals.

In ordinary language, bovine tuberculosis is still called "pulmonary phthisis," or "calcareous phthisis," and, as a matter of fact, the progressive wasting and marasmus of the affected animals are usually the last result of lesions which are pulmonary, and which are infiltrated with calcareous salts. At one time the disease was known as "pommeliere," from the shape and considerable size sometimes assumed by the lesions of the lung or erous membranes. The word, "tubercle," has a similar origin. The old authors, notably Hurtrel d'Arboval, liken to "tubercles" either the glands which are hypertrophied, indurated and infiltrated with specific nodules, or the mammillated tumors which grow on the surface of the serous membranes. When the disease is localized in the pleura or peritoneum, before they get too old, bear a strong resemblance to pearls.

Lesions of Tuberculosis.—Nothing is more variable than the localization of bovine tuberculosis. It may attack any of the organs. The lung and lymphatic glands come first in order of frequency; next the serous membranes; then the liver, intestine and uterus; and lastly, the spleen, the medulla of the boses, the joints, the udder, the skin, etc. Naturally, the symptoms of the disease vary greatly according to the organ or organs attacked. From a clinical point of view two great divisions are made, viz., pulmonary tuberculosis and abdominal tuberculosis. From an anatomical point of view,

three chief divisions are made: Tuberculosis of the organs, tuberculosis of the serous membranes; tuberculosis of the lymphatic glands. In most cases, these three forms co-exist in the same subject, but still it is quite common to see animals succumb, either to intense glandular tuberculosis or to enormous tuberculous growth of the pleura or peritoneum, without the process having attacked the neighboring viscera. It would almost seem as if there were three varieties of the bacillus, each with a preference for one particular tissue or culture medium. Statistics: 40 per cent are affected in both lung and pleura; 20 to 25 per cent in the lung alone; 15 to 20 per cent—in fact, in many cases when the animal is slaughtered quite at the commencement of the disease, tuberculous nodules are only found in the bronchial or mediastinal glands, and the pulmonary lesion which has served as the entrance gate for the contagion either eludes the most careful search or is only represented by a minute focus of disease, much less important than the glandular alterations, which it has preceded and caused. As a general rule, the tuberculous lung is bulky and heavy. Its weight may reach 40, 50, 60 pounds, or more. Surface is covered with knobs, over which the pleura is thickened, and sometimes shaggy growths adhere to the membrane. These vary as to size, and consist of tuberculous lesions. They are sometimes hard and tough, and creak under the instrument used to cut them. On dissection, their tissue is seen to be intensely yellow, rough to the touch, and softened in places, and when the caseous substance is rubbed between the fingers, hard grains are felt in it. Sometimes, again, the knobs show more or less obscure fluctuation, and incision into them gives vent to a yellow grumous, mortar-like, thick material; in this case the masses of tubercular nodules have undergone varying degrees of caseous and calcareous degeneration. They are usually surrounded by healthy lung tissue, pink color.

The liver is often attacked. Miliary tubercle of the liver is rare. The lesion generally takes the form of more or less bulky masses scattered irregularly throughout the substance of the organs. These masses are sometimes o numerous that the liver is altered in shape and indented and acquires a weight of 40 to 60 pounds, or more, softening more rapidly and more completely than those of other viscera. Tu-

berculosis of the kidney is not very rare, but careful dissection generally shows that the tuberculous masses have developed either in the deep layer of the capsule or in the subcapsular connective tissue. The tissue of the organ is compressed by the new growth, but has not taken part in its formation. There are in existence some records of tuberculosis of the mucous membrane of the blader, which gave rise to incurable hæmaturia and a rapidly fatal termination. The spleen is rarely the site of tuberculous lesions. In cases of recent generalization, its tissue may be crowned with an infinite number of minute gray granulations ; but, as a rule, the lesions, when met with, are few, comparatively bulky, nodose, calcified, and provided with a tough, fibrous envelope.

Sometimes growths soften and produce fistulæ and eruption of the caseous contents, either externally or into the neighboring joint. In the udder the initial lesion generally assumes the form of a slowly-progressive sclerosis. The interlobular connective tissue, normally so scanty, becomes gradually thickened and fibrous, and can be seen to be infiltrated by minute miliary granulations, which are gray or yellow and caseous, and scattered here and there in varying numbers. At a later stage these granulations are larger and more numerous and become softened or calcified. The glandular tissue is, as it were, smothered by the hypertrophy and fibrous transformation of the interstitial connective tissue. The large excretory ducts are here and there dilated by masses of yellow caseous material, whichi svery rich in bacilli, and the walls of the ducts are thickened, fibrous and sacculated, and sometimes infiltrated by minute yellowish granulations. Tuberculous lesions of the testicles are very rare, but they may occur in the form of fibrous nodules about as big as a hazelnut or an almond, or else in the form of yellow, calcified or miliary nodules. They may be devloped either in the substance of the gland itself or in the epididymis. Tuberculosis of the vagina, spermatic cord, and prostate have also been described. The muscular tissue seems to be unsuitable for the growth of tubercle. Intra-muscular lesions, even in cases of generalized disease, are most rare. They are occasionlly found, however, and when they do occur take the form of small tumors of the size of a pea, hazel-nut, or a marble, of a dirty white color and a tough consistence. They very

rarely undergo softening, and the muscular tissue in their immediate neighborhood is schlerosed.

Symptoms.—Bovine tuberculosis is a disease of very slow evolution. Its presence is often compatible with all the appearances of health, and it may exist for months and years without anything causing one to suspect its existence. The clinical diagnosis of it is extremely difficult, even at an advanced period of its evolution. The symptoms vary much, according to the form and according to the localization of the disease.

a. Pulmonary Tuberculosis.—This is much the most common form, and it is also the most dangerous, because the virulent matter, which the softened nodules empty into the bronchi, is shot forth from the mouth during the fits of coughing. This expectorated matter becomes dried and reduced to a powder, and infects the neighbors of the affected animal, either by penetrating into the respiratory apparatus with the inspired air, or by penetrating into the digestive tube with the food, whether liquid or solid. It is customary to describe three stages or degrees in the evolution of pulmonary tuberculosis, and its study and description are thereby rendered more easy.

First Degree.—Quite at the outset there may be absolutely no symptoms. A careful and attentive cow-keeper will tell you that such and such a beasti nhis stable coughs at long intervals, perhaps, when the doors are opened in the morning to let in the fresh air, when it is made to stand up or walk, when it is made to drink, or when it is given dusty food; the cough is a slight one, dry, a little whistling, and, in short, paroxysms.

Second Degree.—The disease is more pronounced. The hair has lost its gloss, and becomes dull and bristly. The skin is adherent and dry, and if taken between the fingers is with difficulty detached from the subjacent tissues, especially at the level of the last ribs, and the fold formed is not effaced for a long time. The region of the kidneys shows an abnormal sensibility to pressure, and the animal, when pinched there, shrinks under the touch. All these signs are vague enough, but butchers and breeders know how to take advantage of them. These signs, moreover, acquire a real value when they occur in the stable known to be infected.

Pressure on the ribs or the region of the kidneys causes groannig and coughing. The cough is still dry, hoarse, whistling and paro ysmal; it is thick, deep, and followed by a gurgling back towards the chest, and one guesses that mucous is circulating in the bronchial tubes. Occasionally the mucous may be shot forth from the mouth during a violent and long fit of coughing, and may be seen to be purulent, thick, viscid, and yellow. The diagnosis may then be made certain by examining it under the microscope, or inoculating it. In addition to these signs derived from the pulmonary lesion, we soon get digestive disturbances, mostly of a glandular origin. The appetite becomes diminished and capricious. Rumination is delayed, is slow and irregular, and only accomplished uring rest. After a meal meteorism is frequely noticed, but does not cause much discomfort and does not last long. At this period the secretion of milk is diminished and its quality alters. It becomes slightly serous and has a faint bluish tine. Nevertheless it does not look bad and is still salable, and if the udder is not the seat of specific lesions, it may be consumed without danger.

Third Stage.—At this period the evolution of the disease becomes rapid. The skin is bound down to the bones and the hair is dull and bristling. The whole expression denote dejection and prostration. The eyes are watery and sink back in their orbits, and the lids are stuck up with scaly matter. A yellow discharge from the nostrils, which it has not strength enough to clean with a lick of its tongue. The animal remains standing up, with its shoulders stretched apart, as if in expansion of the chest. The breathing ic quickened, short and jerky; the cough is frequent, feeble and painful. Pinching the back up causes prolonged fits of coughing and at the same time makes the animal shrink. The stethoscopic signs now leave no doubt as to the nature and severity of the lesions. Percussion reveals more or less extensive areas of dullness, with tympanitic resonance over the cavities, which are near the surface. On ausculation, cavernous rales, amphoric murmurs and splashing sounds are easily perceived.

Duration, Termination.—Tuberculosis is the type of chronic diseases. Its evolution is extremely slow and may last for years. Tuerculin is a filtrate containing in solution

the products of massive cultureso f the bacillus of tuberculosis. When the cultures have reached the desired stage of development the liquid containing them is reduced by evaporation to one-tenth its original bulk and filtered through porcelain, which removes the bodies of the bacilli previously destroyed by prolonged exposure to steam. The resulting syrum, amber-colored liquid with a characteristic sweet odor, is tuberculin, and is of great value in the diagnosis of tuberculosis in cattle. Tuberculous herds are a standing menace to the community in which their products are consumed. For this reason, most of the States in the Union and our general government, as well as other nations of the civilized world, are framing laws looking toward the segregation and destruction of all infected cattle. To carry out the requirements of these laws, tuberculin is indispensable. No other known test can be relied upon to reveal the presence of tubercular infection in its early stage. The diagnostic value of tuberculin lies in the fact that in its earliest stages, when the most insignificant changes have taken place, and both symptoms and physical signs are absent, the characteristic reaction to the tuberculin test will invariably show the presence of tuberculosis. The value of tuberculin to owners of herds and the consumers of their food products cannot be overestimated. The presence of one disease animal endangers an entire herd, as well as the community of consumers of the products of the herd. By means of the tuberculin test, all diseased animals can be detected.

How Applied.—First, ascertain the temperature of the animal to be tested. If this found abnormal, the testing should be postponed until the cause of such abnormality be found and removed.

The normal temperature of the ox is 100 to 102 Fahrenheit. It is always advisable that the temperature be taken at intervals—morning, noon and night—at least twenty-four hours before making the test. This is of importance because of the normal temperature variations in the course of twenty-four hours in the lower animals. Such variations must be carefully distinguished from those characteristic to the tuberculin test in tuberculous cattle. Beginning six hours after the injection of the requisite quantity of tuberculin, take the temperature every hour until it begins to fall. A

rise of 2 Fahr. above the normal variation is sufficient to condemn; it is sometimes noted within six hours, and may exceed 4 or 5 Fahr.

Before making the test ascertain, by physical diagnosis that advanced tuberculosis does not exist. In making the test always exercise great care in keeping syringe and needle clean. Sterilize before using by boiling in water for five minutes, allowing the syringe to cool before using. It is important to clean and wash thoroughly the site of inejction (from which the hair has been previously clipped or shaved) with a 5 per cent solution of carbolic acid. The dose of concentrated tuberculin is small, and the proper dilution at the time of administration is difficult. For this reason, we supply tuberculin diluted ready for use. The solution contains enough carbolic acid to preserve the product indefinitely. The test dose is from 3-4 to 1 c. c., or 10 to 15 drops, administered by means of the hypodermic syringe. When the requisite does is injected into atuberculous animal, a specific febrile reaction follows, which is characteristic to the test. In non-tuberculous cattle, no reaction is noted and no harm follows. As a matter of information to those who have not used tuberculin, or who are unfamiliar with its production, we would state that there can be no possible change of its producing tuberculosis in cattle so tested, from the fact that the live germs (bacilli of tuberculosis) have previously been destroyed by heat, and the dead bodies removed by filtration through special filters. Two conditions are met which invariably defeat the purpose of the test. These are advanced pregnancy and the presence of broken-down tubercular tissue. Frequently, in the former condition, the temperature is anormally high, especially during the latter part of the day; in the latter state, the system contains a large quantity of absorbed tubercular matter, and will not respond to the test with tuberculin. Fortunately, possible errors from these sources can easily be eliminated by the ordinary methods of physical diagnosis.

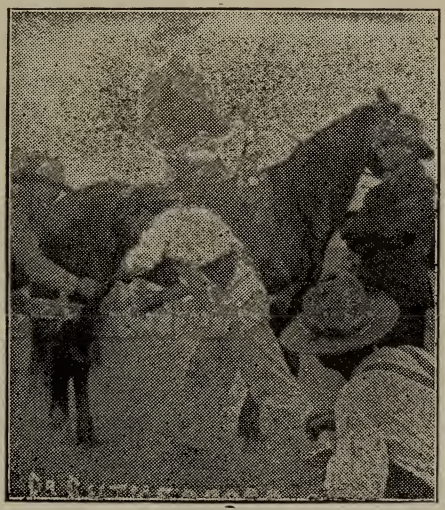
CASTRATION OF RIDGLING, OR CRYPTORCHID.

This means where the testicles have never descended the inguinal ring, and still remains in the abdomen. For this operation you will have to cast the horse, tying him securely, drawing his hind legs down to the circingle, which was placed around his body before casting. Place on back. (You'll need about four men to help you.) Place bale of hay on each side of horse, or nice, smooth logs are better. Always diet your horse about forty-eight hours before operating; no feed at all except a little mash bran. One hour previous to operation give enema, three or four gallons warm water per anus. Be sure to render hand and instruments antiseptic, using carbolic acid—tablespoonful in quart of warm water. Have sitting by close a quart of carbolized olive oil, as you will need it from time to time until operation is completed.

First step: The knife. Make incision, as shown in cut above, six inches long, only through the skin. Now oil your hand good and work into scrotum until you find the ring. This will bring you to the spermatic cord, to the abdominal wall. Most times index finger can be passed through the ring into the abdomen; after passing one finger in, work

until you get second one in; then feel for the cord, which nine out of ten you can find. Should you fail to reach the cord, oil arm good and pass in rectum; you can thus find testicles, and push them down so can be clasped with the two fingers which have been passed in through the inguinal ring.

Second step: After you have clasped the testicle pull steady until you get it through the ring, then take an ecraseur, slip on testicle and cut off, as you would in simple castration. After you are through the operation, wash out good with milk-warm water, using bichloride tablets, making about 1 to 500 strength. (Ask your druggist.)



SIMPLE CASTRATION.

I mentioned in another lesson how to castrate horses, but this method is the easiest and simplest of all. I geld them from eighteen seconds to two minutes, and you can do the same thing. Never throw your horse in doing simple castration, as it is easy on the horse; also the operator.

First step. If horse does not stand still, use one of Dr. Rutherford & Rutherford Co.'s nose clamps and he will stand perfectly still.

Second step: Sterilize your instruments, which are two

in number—knife and Drs. Rutherford & Rutherford Co.'s Improved Emasculator. Walk up to horse and catch testicle in either hand; take knife, make long incision, letting testicle drop out; let go one, take out other same way. After you have let both out, take emasculator, place on cord about testicle and mash off. Be sure to let rough side of instrument go next to horse, as this is what prevents bleeding.

Oil good with carbolized olive oil; turn loose, and all is right.

Prescriptions

No. 1. Flatulent or Wind Colic.—Salsoda ½ oz. Tr. peppermint 2 dr. Warm water 3 oz. Mix, give at one dose, and repeat every 25 minutes until relieved.

No. 2. Spasmodic Colic.—Chloroform 2 dr. Sul. Ether ½ oz. Tr. Opii ½ oz. F. E. Canibus Indica Gtt. 30. Mix, give every 25 minutes until relieved. This is the formula used in laboratory in preparing medicine for the trade.

No. 3. Inflammation of the Kidneys.—Tr. Opii ½ oz. Sweet spts. nitre ½ oz. Oil of cubebs 1 dr. Warm water oz. 6. Mix, give at one dose every 60 minutes until relieved.

No. 4. Thumps in Horses.—Whiskey Rye oz. 8. Tr. Digitalis dr. 2. Mix, give one-half oz. half pint sweetened water every three or four hours until relieved.

No. 5. Liniment for Puffs.—Oil of organum. Oil of cedar. Oil of sassafras, a. a. oz. 2. Alcohol oz. 8. Bathe parts well and use the bandage as taught you in the lesson.

No. 6. Blind Staggers.—Quinine Sulphate oz. 1. Spts. Vini. Rectiff. oz. 10. Mix, give one oz. in half pint of water every three hours. Then give a good purgative, say one quart of raw linseed oil, 5 dr. aloes powd. Mix and drench all at one dose.

No. 7. Lockjaw in Horses.—F. E. Gelsemium, F. E. Lobelia, of each oz. 2. Mix, give one oz. every three hours as drench or per rectum. Give hypodermically morphine every three or four hours in 3 gr. doses. Keep bowels well open.

No. 8. Blister.—Red Iodide Mercury 2 dr. Pwd. canth. oz. 1. Arceneus acid dr. 1. Cobol. dr. 2. Adeps enough to make a soft paste. Shave off hair and then rub on medicine and use bandage as taught you.

No. 9. Blain in Cattle.—Sulphate of magnesia oz. 20. Warm water one qt. Dissolve and give at one dose as drench. Repeat in six hours if bowels not open well.

No. 10. Blain in Cattle, Fever.—F. E. Aconite gtt. 20. Tr. Belladonna Gtt. 10. Mix, give every 30 minutes until fever abates.

No. 11. Blain.—Give this purgative when other will not do, but don't give this if the other will act. Oleum Tiglii gtt. 15, Calomel gr. 30. Sulphate magnesia oz. 15. Mix with oil, linseed or sweet, and give at one dose.

No. 12. Constipation in Cattle.—Oil Linseed (raw) oz. 12, Gentian Ginger a. a. dr. 2. Mix, give at one dose and repeat in 12 hours, and continue until bowels are regulated.

No. 13. Diarrhoea in Calves.—Tr. Opii dr. 2. Boiled sweet milk half pint. Mix, give every three hours until bowels are checked.

No. 14. Diarrhoea in Calves.—Give tablespoonful of prepared chalk every few hours until purging ceases.

No. 15. Costiveness in Cattle.—Glauber Salts oz. ½. Corn meal one pint made into a gruel by pouring on boiling water. Mix, and stir, give as drench. Now, this is for grown cattle. Give smaller doses if not grown.

No. 16. Hoose in Calves.—My blood tonic teaspoonful, Turpentine gtt. 20, Tr. Aconite gtt. 10. Mix, give every few hours and follow with injection of warm water and castile soap.

No. 17. Flux or Slimy Black Rot in Cattle.—Oil linseed oz. 20. Give three times daily, and also give Tr. Opii. oz. ½ three times daily.

No. 18. Splenic Fever in Cattle.—F. E. Aconite dr. 1. Gentian Rad. F. E. oz. 1. Ammon chl. oz. 1. Potas. nit. oz. ½. Mix, give one oz. every hour until fever abates.

No. 19. Heaves in Horses.—Arsnicum alba dr. 2. Pwd. stramonium dr. 2. Mix, divide into 24 pwd., give one per day in mashed feed.

No. 20. Screw Worm Killer.—Chloroform oz. 2. Acid Carbolic oz. 1. Oil picis, liq. oz. 1½. Mix and apply to worms.

No. 21. Liniment for Curb.—Oil Organum, Oil Spike, Oil Amber, Oil Turpentine, Oil Comphor a. a. oz. 1. Alcohol q. s. oz. 10. Mix. Bathe parts well two or three times per day.

No. 22. Pneumonia.—Nitrate of Potash oz. 5, Soda bicarbonate oz. 1. Mix, divide into 12 pwd, give one every 4 hours; at same time give No. 23.

No. 23. Pneumonia.—Carbonate ammonia oz. 1, Pulverized cinchona bark, oz. 2½, Pulv. nux vomica oz. ½, pulv. digitalis leaves, dr. 3, pulv. gentian oz. 2. Mix and make into 8 balls, give one every 6 or 8 hours.

No. 24. Healing Powders for Fresh Wounds.—Burnt alum oz. 2. Prepared chalk oz. 2. Calomel dr. 2. Iodiform dr. 2. Sub-nit. Bis. dr. 4. Mix and sprinkle on parts three or four times a day.

No. 25. Scratches.—Oxide zinc dr. 4; Carbolic acid dr. 2; Adeps to make soft paste, and apply to parts two or three times per day.

No. 26. Swollen Tendons or Legs.—Saltpeter oz. 4, Sugar lead oz. 2, Muriate ammonia oz. 1, Chloride sodium pt. 1. Aqua qt.1 Mix, shake well before using and rub parts three or four times per day.

No. 27. Ringworm.—Flour of Sulphur oz. 1, Iodine dr. 3, Oil of tar oz. 5. Mix and apply to parts two or three times per day.

No. 28. Mange.—Oil olive oz. 4, Oil tar oz. 5, Flour sulphur oz. 2. Mix and rub affected parts well. Leave on 25 hours, after which wash off and apply again, and so continue until well.

No. 29. Lice and Ticks on Cattle.—Plug tobacco, Greenville is best, lb. 1, water 3 gallons. Boil half hour and wash parts well. Repeat in 48 hours if necessary. Give No. 37 at same time internally.

No. 30. Snow Liniment.—Aq. ammonia oz. 1, Olive oz. 2. Mix; this is a good linment for any local bruise.

No. 31. Cough Balls. Ext. Digitalis gr. 15, Camphor, Tartar emetic. linseed meal a. a. oz. 1, Nitrate potash dr. 3. Mix, make 3 pills and give one per day until cough ceases.

No. 32. Soap Liniment.—Hard Soap. Camphor, Oil Rosemerry a. a. oz. 1. Rect. Spirits pt. 1. Mix the the soap with the spirits, then add the other, and rub parts affected.

No. 33. Alterative.—Powd. Aloes oz. 1½, Castile soap 1½ oz. Pwd. Carraway Seed oz. 1½. Ginger dr. 4. Use plain oil to make mass, divide into six balls and give one per day.

No. 34. Condition Balls. Powd. Gentian, pwd. Ginger, a. a. oz. 1; Sulphate Iron, ozs. 2. Mix; make in 4 pills and give one per day.

No. 35. Purgative for Cattle.—Epsom salts one lb. Gentian, Ginger a. a. dr. 2. Calomel dr. 1. Croton oil gtt. 20. Warm water qt. 1. Mix, give at one dose. This is for abad case where a mild purgative will not do.

N. 36. Inflamation of the Bowls.—Digitalis gtt. 15. Tr. Opii oz. 1-2. F. E. Aconite gtt. 20 Water oz. 6. Mix, give at one dose every 60 minutes until relieved.

No. 37. My Blood Tonic; Black Antimony, Foenugreek a. a. oz. 2. Gentian, Mustard a. a. oz. 4. Sassafras bark oz. 1, Sulphur oz. 6, White Arsenic dr. 1, Nux Vomica dr. 2, Skunk Cabbage 1-2 oz. Mix, give tablespoonful thrice per day in feed (Formula used at laboratory in preparing blood Tonic for the trade—sold at drug stores.)

No. 38. Wart Extractor.—Sulphuric acid, Nitric acid, Sulphate zinc a. a. oz. 1-2. Mix. Cut off wart smooth with surface, as taught you, and apply once per day for 8 days.

No. 39. Haves, How to Patch Up—Oil picis liq. oz. 2. F. E. Lobelia oz. 1. Mix, give at one dose and repeat every morning for three mornings. Give no dry food.

No. 40. How to Fatten Your Horse in a Very Short Time.—Nitric acid dr. 3, Soda bicarbonate oz. 2, Assafoetida dr. 3. Mix, give one tablespoonful twice per day in meal. P. S.—Remember what I told you in lesson on live horse. Don't give to valuable horses. (Trading remedy.)

No. 41. Hog Cholera.—Unslacked lime oz. 6, Assafoetida oz. 1, English calomel oz. 1. Dissolve in quart water and give tablespoonful once per day. Shake well before using.

No. 42. Eye Lotion where there is Inflamation.—Silver nitrate, gr. 10. Sulphate zinc gr. 3, water oz. 4. Mix and apply to eye three or four times a day.

No. 43. Proud Flesh.—Sulphate zinc dr. 3, Sugar lead oz. 1. Burnt alum oz. 2. Mix and sprinkle on parts three or four times a day.

No. 44. Swollen Sheath and Penis.—Sugar lead oz. 1, Sulphate zinc dr. 3, water 1 qt. Mix and bathe parts freely three or four times per day.

No. 45. Fever Mixture.—Tr. aconite dr. 1, F. E. belladonna dr. 2, Aq. oz. 4. Mix, give tablespoonful every hour on tongue.

No. 46. Poisoned Horses or Cows.—Hydrate chloral oz. 1, tr. opii oz. 1-2. Mix, give at one dose every two hours until symptoms subside.

No. 47. Thumps in Horses.—Whiskey oz. 2, sweet spts nitre oz. 1-2 Nitrate pot. dr. 1. Mix, give at one dose and repeat in eight hours if necessary.

No. 48. Purgative for Horses.—Powd. Nux. vom. dr. 1, Gentian ginger a. a. dr. 2. Aloes pwd. dr. 7. Mix, Sig.; Bolus, give at one dose, but don't repeat under 48 hours.

No. 49. Eye Water.—This is far sore eyes where they are mattering. Zinc sulphate gr. 5, Nitrate silver gr. 10, Attrophine sulph, gr. 2 1-2, Ac. dist. oz. 5. Mix and put a few drops in eye every four or five hours.

No. 50. Nasal Gleet.—Carbolic acid oz. 1, Oil tar oz. 4, Alcohol oz Turpentine oz. 2, Aq. oz 6. Mix. First wash out nostrils with soap and warm water, then use one tablespoonful as spray after washing.

No. 51. Hoof Tonic.—Oil tar oz. 4, Oil organum oz. 1, Oil linseed oz. 6, Alcohol oz. 7. Mix and apply to foot once or twice per day as directed in Lesson on Foot (little mop rag on stick). This is the same formula used at laboratory in preparing Hoof Tonic for the trade. Ask your druggist for it.

No. 52. Collar or Saddle Sores.—Pulv. Alum oz. 1 2, Sulphur oz. 1-2, Calomel gr. 30. Mix, and grease the parts before using with vasaline; then sprinkle on part 4 or 5 times a day.

No. 53. Fistula Liniment (or Burns on any part of body.)—This is for fistula before it has bursted and running. Turpentine, coal oil a. a. oz. 2, Hartshorn oz. 1, oil sassafras oz. 1 1-2. Mix, and bathe parts once per day for three days, theni ron with hot iron each day.

No. 54. Lung Fever (Blister).—If the pulse is beating at 70 per minute, you may blister opposite the lungs with this blister. Cantharides dr. 4, Adeps oz. 4, Resin oz. 1-2. Mix, and apply to parts every three hours until well blistered.

No. 55. Gravel in Stem of Bladder.—Take prickly pear pads that bloom on the prairie. Gather one gallon of pads, put in three gallons of water and boil until you have one gallon, then strain through cloth and give one pint of this medicine per day as drench until symptoms are no more. Symptoms: Stretching out, trying to urinate, may make small quantity of water.

No. 56. Wormy Horses.—Calomel gr. 30, Coperas dr. 3, Pulv. Sage oz. 1, Pwd. Arsenic dr. 1. Mix and divide into 12 pwd. Give one three times a day in feed.

No. 57. Old Sores.—Lunar Caustic dr. 1. Water oz. 2. Mix and apply to sore two or three times per day with soft rag or cotton.

No. 58. Sore Mouth.—Borax oz. 1, Honey oz. 2, Water oz. 4, Mix and apply three of four times per day if you think case requires it

No. 59. Favorite Liniment.—This is one of the best liniments on the market and is called Dr. Rutherford's Favorite Liniment. This is the same formula that is used at the laboratory in putting this up for the trade: Oil of Cedar oz. 4. Sul. Eth. oz. ½, oil sassafras oz. 4, Aq. ammonia oz. 1-2, Gum camph. dr. 3, Spts. Vini rectif, q. s. O. I. Mix and apply three or four times per day if necessary.

P. S.—This liniment is also good for man; burns, cuts or any kind of hurt.

No. 60. Liniments for Strains of any Kind.—Oil of spike, Oil of origanum a. a. oz. 2, Aq. ammonia oz. 1, Alcohol q. s. oz. 8. Mix and bathe affected parts well three or four times a day until you get up a good blister; then grease with hog lard.

No. 61. Blood Stopper.—Monsells Solution of Iron oz. 2. Sig: Saturate a piece of cotton, say as large as a quail egg, press to the bleeding parts, as taught you, and the blood will stop immediately.

No. 62. For Colic in Cows.—Tr. Opii oz. 1 1-2, Ext. Ginger dr. 6, F. E. Canibis indica oz. 1-2, Aq. warm oz. 20. Mix, divide into two doses, give half as drench and repeat in 30 minutes if not relieved of pain.

No. 63. Tonic for Cattle.—Pwd. Gentian oz. 1. Pwd. Ginger oz. 1, Sulphate quinine oz. 1-2, Pwd. Iron oz. 2. Mix, divide into 12 powders and give one three times per day, or give No. 37.

No. 64. Wormn.—Aloes barb dr. 4, Ferri Sulph. (pure) dr. 4, Calomel dr. 2, Antimony Tart dr. 4. Mix, divide into three doses and give one per day.

No. 65. Diarrhoea.—Protan dr. 6, Pwd. Ginger oz. 1. Mix make into three pills and give one every three hours.

No. 66. Catarrh—Sodium chloride, Sodium sulphate a. a. oz. 4, Sodium bicarbonate oz. 2, Licorice root oz. 3. Mix, give tablespoonful three times a day.

No. 67. Dyspepsia.—Sodium chloride oz. 4, reduced; iron dr. 2; Calamus root pwd. oz. 1; bicarbonate soda oz. 2. Mix. Give tablespoonful three times a day.

No. 68. Gall—Saddle.—Salicylic acid oz. 1-2, Resorsin dr. 2, Lactic acid dr. 2, Colodium flex. oz. 1 1-2. Mix, wash off parts well and apply enough of the medicine to form a thick coat, let remain three days, then wash off and use the following: No 69. (P. S.—Use this for corns in feet, as taught you in Lesson on Foot.)

No. 69. Gall—Saddle.—Iodiform sub. nit. bis., Calomel a. a. dr. 1, Alum burnt oz. 1-2, Ac. boric oz. 1. Mix, sprinkle on parts three or four times per day. (P. S.—You may have to repeat the first as many as three times, but where the case is not bad one application will do the work.

No. 70. Jaundice in Cattle.—Aloes oz. 2 1-2, Rhubarb oz. 2 1-2, Argols (crude tartar) oz. 5, Calamus oz. 5, Sodium Sulphate oz. 5. Mix, give one tablespoonful three times a day. You can tell this disease by the mucus of the mouth and the white of the eye turning yellow, also the urine becomes dark and the dung light.

No. 71. Lice and Ticks on Cattle.—Yellow bar soap oz. 20, Alcohol (wood) oz. 2, Crude naphtholine, oz. 2, Aqua oz. 80. Mix, heat over a gentle fire and then stir until cold. Rub the parts thoroughly and repeat in two days if you think necessary.

No. 72. Udder (Inflammation).—Salicylic acid gr. 50. Mercurial ointment oz. 1, Liniment camph. oz. 3. Mix, apply ot udder and rub freely four or five times per day.

No. 73. Urine (Bloody).—Sodium acetate, Powd. camph. dr. 3 of each, White lead dr. 1. Mix, divide into 12 pwd., give one three times a day in feed, or as drench in pint of water.

No. 74. Worms (in Cattle).—Powd. Wormwood, Powd. Tansy, Powd. Aloes a. a. oz. 1, Dippel's Oil oz. 4, linseed oil oz. 16. Mix, give half as drench and wait six hours and give remainder.

No. 75. Worms (Hog).—Sodium sulphate pwd. oz. 2, Tansy pwd. oz. 5, Castor oil dr. 7, Naphtholine dr. 1-2. Mix with molasses and give tablespoonful every two hours.

No. 76. Cough (in Dogs).—Sodium bromide dr. 2, Creosote water oz. 2, Fennel water oz. 4. Mix, and give half tablespoonful four times daily.

No. 77. Cough (in Dogs).—Tr. belladonna oz. 1-2, Syrup squills oz. 1-2, Paregoric oz. 1, Aq. q. s. oz. 6. Give one teaspoonful three times a day

No. 78. Distemper in Dogs.—Tr. Aconite Root dr. 1-2, Sweet Spts. Nitre oz. 1-2, Tr. Gentian oz. 1-2, Syrup Tulu oz. 2, Aq. q. s. oz. 4. Give a tablespoonful every two hours and feed on beef tea, sweet milk and raw eggs.

No. 79. Distemper in Dogs.—Elixir bromide potassium oz. 6, Tr. gelsemium dr. 3. Mix and give teaspoonful every two hours.

No. 80. Constipation in Dogs.—Give tablespoonful of castor oil, repeating this in 8 or 10 hours; also give injection of soap and warm water freely. If this will not do try No. 81.

No. 81. Constipation in Dogs.—Jalap dr. 1, Ginger, Gentian a. a. dr. 1, Syrup q. s. oz. 1. Give tablespoonful every six hours.

No. 82. Mange in Dogs.—Mange is so well known that I will only give you the prescription for it; Oil cadium oz. 1, Flour of Sulphur oz. 2, Adeps oz. 4. Mix, wash dog well, dry thoroughly and rub on medicine.

No. 83. Pneumonia in Hogs.—How to know it: By the fast breathing and shivering. There will be more or less cough, and hog will lose appetite. Put the animal in a comfortable stall, put a mustard plaster on the chest and give the following: Soda bisulphate dr. 3, Nitrate potash dr. 3. Make one pint of meal gruel

and stir this in when cold. Give the hog half of this if he will eat it; if not, drench him by placing a board in his mouth with a hole through it so he can't crush bottle or bite operator. The best position in which to have the hog while drenching is sitting on his hind parts with his feet before him. No dange in drenching this way. Give all the sweet milk he will drink.

No. 84. Quinsy in Hogs.—You know this by the swelling under the throat. It is a common and very often fatal disease if not treated immediately, and with the proper treatment. If you find the hog has difficulty in swallowing and there is a swelling under the neck, you may know there is quinsy. First, secure the hog good and puncture the parts well, as I have spoken of in another part of this book, and apply very hot cloths to the parts, eeping this up for several minutes at a time, and repeating often. After using this treatment several times, rub on my Favorite Liniment 4 or 5 times a day; then give Prescription per rectum: Sulphate magnesia oz. 4, Olive oil oz. 4, soapsuds 1 pt. or half pt. Mix and inject.

No. 85. Congestion of the Brain in Hogs.—The hog becomes dull and stupid, the bowels constipated the animal begins to walk in a circle, the limbs become stif; he will froth at the mouth and the breathing is hard. This is most common in well-fed hogs. Hogs that are thin in flesh are rarely affected with this disease. Give him the following per mouth if convenient; if not, per rectum will do: Quinine sulph. gr. 30, Spts. vini rectif. oz. 5. Mix, give 1 ounce in half pint sweet milk every 2 hours; give purgative.

No. 86. Diarrhoea in Hogs.—Pwd. foenugreek seed oz. 2, pwd. chalk oz. 2, pwd. gentian oz. 1, Soda bicarbonate oz. 1. Mix, give tablespoonful to each hog three times a day. Give to pigs according to age and size.

No. 87. Lice on Hogs.—Wash hog well with soap and water; take creoline oz. 2, warm water 1 1-2 gal.; wash and not dry. This will kill the lice every time, but you may have to repeat where there is nits to batch, which were on the ends of the hairs that the creoline did not reach.

No. 88. Mange in Hogs.—Flour of sulphur oz. 2, oxide zinct oz. 1, Adeps oz. 10. Mix, wash hog well and after drying smear ointment all over him good, letting it remain on two days. You may have to repeat in bad case, but hardly ever. Give internally sulphur dr. 2, Nitrate pot. gr. 15. Mix, give once per day for ten days. Apply mustard plasters as taught you and give oils and soft feed. Give no dry feed at all. Then give this: Ferri Sulph. Ex. oz. 2, Gentian Rad oz. 3, Quin Sulph oz. 1-2. Mix Ft. Chart No. 12. Sig: Give one powder three times per day, noon, morning and night.

No. 89. Inflammation of the Brain in Cattle.—Calomel dr. 1, Oleum Tiglii gt. 20, Oil linseed pt. 1. Mix, give at one dose. After six hours give No. 125 as directed.

No. 90. Septicemia in Cattle.—Sulphate of Magnesia oz. 20, Aqua oz. 24. Mix and give at one dose. Wait six hours, then give No. 6.

No. 91. For Strained Shoulders, in Cattle.—Aq. ammonia oz. 3, Oil Terebenth oz. 3, Spts. camph. oz. 4, Oil organum oz. 3. Mix and rub parts well two or three times a day until you get a good blister.

No. 92. For Lice on Cattle.—Strong bar soap oz. 12, Greenville plug tobacco oz. 6, Naptholine crude oz. 3, water one gal. Boil down to one-half gallon and wash. This will kill them every time.

No. 93. Fly and Mospuito Oil.—Ac. Carbolic oz. 3, Oil Pennyroyal oz. 8, Oil Picis liq. oz. 12, Cottonseed oil oz. 16. Mix, shake well and apply to mane and tail and around on the walls, if in the stable.

No. 94. Sores About the Feet of Cattle.—Wash off good with warm water and castile soap. Rinse the parts well and dry and apply the following: Sugar of lead oz. 1, Zinc sulphatis dr. 2, Muriate ammonia oz. 1-2, Apua O. I. Mix. Sig: Wash parts two or three times a day.

No. 95. Mange on Dogs.—Oil turpentine oz. 2, Oil cadium oz. 2, Benzine oz. 3, Olive oil q. s. ad pt. 1. Mix, and bathe dog well, after washing with soap and water. Let stay on 48 hours, then wash off.

No. 96. Old Sores and Proud Flesh.—Burnt alum oz. 1, Sub. nit. bis. dr. 2, Calomel dr. 1, Acid boric oz. 2. Mix and sprinkle on parts once per day after washing good.

No. 97. Saddle or Harness Hurts on the Back.—Oil origanum oz. 2, Oil cedar oz. 3, Spts. vini, rectif. oz. 5. Mix and bather parts two or three times a day for five days, then grease parts well with olive oil to keep the hair from falling out. Now this is for the back when first bruised. If there is a sitfast, nothing but a knife will remove it.

No. 98. Fever Mixture Where Fever is High for Horse or Cow.—Gentian Rad F E oz. 1, F E Belladonna dr. 2, F E Aconite dr. 1, Potas nit oz. 1-2, Aqa q. s. O. I. Mix, give two oz. every two hours until fever goes down.

No. 99. Another Good One for Fever.—Quinine sulph. dr. 6, Acantanlid oz. 2, Spts. ether nit. oz. 2, Alcohol oz. 10. Mix, and give one and one-half oz. every two or three hours in half pt. aqua.

No. 100. Sore Teats in Cattle.—Acid Tanic dr. 4, Acid Carbol. dr. 1, Olive oil oz. 6. Mix and grease teats good after milking.

No. 101. Distemper in Horses.—Oil Picis liq. oz. 5, F E Lobelia oz. 3, Menthol Crys. dr. 1. Mix. Use in nose as directed on live horse lesson. Apply to false nostrils with little mop—(rag or stick.) P. S.—Also smear pine tar on box where horse is fed once per day and give internally No. 37, as directed. If throat is swollen bathe with Favorite Liniment.

No. 102. Exzema in Horse.—Creoline oz. 4, water oz. 20. Mix. Wash parts well every 3 days for 9days, then grease parts well with olive oil; after two days remove scabs. Give at same time No. 37, and keep up three months. This is a hard thing to cure, but if you will stay with above treatment it will cure. Give 5 gr. arsenic 3 times day while treating.

No. 103. Scratches.—Castile Soap oz. 2, Resin oz. 2, Coperas oz. 1-2. Mix, melt together over a slow fire and it is ready for use. Rub parts well 3 times a day, using a teaspoonful.

No. 104. Quitter.—Zinc Sulphate dr. 1, Silver Nitrate gr. 30, Aqua dist. oz. 4. Mix. Sig: Inject three times a day with long pointed syringe.

No. 105. Tread, or Bruised Coronet.—Tr. Belladonna, Tr. Opii, Tr. Aconite a. a. oz. 1. Mix. Apply to parts three or four times a day. P. S.—If there be any sore dust on No. 69.

No. 106. Rheumatism in Horses.—Quin. Sulph. oz. 1, Iodide Pot. oz. 2, Nux Vomica pwd. dr. 4. Mix. Divide into 48 powders and give one three times a day. P. S.—Also follow up with my blood tonic, No. 37.

No. 108. Eye Water.—My Favorite.—Hydras Sul. gr. 3, Zinc Sul. Mor. Sul. Ac. Boric, of each gr. 2, Cocaine Hyd. gr. 1, Aq-Rose, q. s., oz. 1. Mix. Apply to eye with soft rag or cotton. This is the eye water that we have on the market, and is the same formula used in our laboratory. Call at drug store if you can't get it filled. Sold by all druggists.

No. 109. Vomiting in Dogs.—Ac. Carbol. drops 3, Sub. nit. bis. dr. 1, Tr. Opii camph. dr. 1-2, Glycerine oz. 1-2. Aq. cinnamon q. s. oz. 1 1-2. Mix. Teaspoonfull every two or three hours.

No. 110. Cough, Chronic, Horse.—F E Belladonna oz. 1 F E lobelia oz. 3, Acid Hydrocyanic dil. oz. 1, Oil Picis liq. oz. 1, Oil Camph. oz. 3, Syr. Simplex q. s. oz. 12. Mix, give one oz. every three hours until relieved. (Bad case may add morphine, 1 to 2 gr.)

No. 111. Eyes, Inflamed.—Morphine Sulph. gr. 4, Zinc Sulph. gr. 2, Aq. distil. oz. 1. Mix. Few drops in eye three or four times a day.

No.112. Sweating Mixture.—Tr. Arenica rad. oz. 1 1-2. F E Pilocarpus oz. 1 1-2, Aq. q. s. O. I. Mix. Give at one dose and repeat in one hour if necessary.

No. 113. For Sores on Horses, Hogs, Dogs and Cattle.—Oxide zinc gr. 10, Sub. nit. bis. gr. 20, Iodiform gr. 10, Ac Boric oz. 1. Mix. Dust on parts three or four times a day, first boiling out sore good by pouring tablespoonful of proxide of hydrgen.

No. 114. Mange, Internal Treatment—Horse.—Fowler's Sol. oz. 16, Tr. Cinchona comp. oz. 16. Mix, give 1-2 oz. in wet feed three times a day. Give at same time my Blood Tonic.

No. 115. Itching Skin in Dogs.—Bismuth sub. nit. dr. 2, Lanolin oz. 1. Mix. Apply when necessary.

No. 116. Stimulating Liniment.—Ol Sinipis, Aq. Ammon, fort. of each oz. 1, Oil gossipi sem. oz. 6, Mix. Apply to parts.

No. 117. Worms in Horses.—Santonin gr. 20, Oil lerebinth dr. 4, Aloes barb dr. 6, Ol Lini to make pt. 1. Mix. Give at one dose and follow this with No. 37. Very necessary to give 37.

No. 118. Gas Colic in Horses or Cows.—F E Canibis indica oz. 1-2, F E Hyascyami dr. 2, Tr. Zingibler oz. 1 1-2 Amonum chloride dr. 2, Acid salicylic dr. 3. Mix. Give one dose in pint of warm water; repeat in 25 minutes if not relieved.

No. 119. Sore Mouth and Tongue.—Borax pwd. oz. 1, Honey oz. 1, water, q. s. pt. 1. Mix. Shake well and apply 4 or 5 times daily with soft rag.

No. 120. Snake Bite—Horse.—Whiskey 1 pt. Aq. Ammonia 1 dr., warm water 1-2 pt. Mix. Give at one dose and repeat in one hour if not better.

No. 121. Chronic Cough.—Ext. nux vomica gr. 3, Ext. belladonna gr. 5, pwd. squill gr. 15, Ammonia chlodire dr. 1, Terebinth drops 15, Oil of tar, drops 15, Comp. licorice pwd. Q. S. Bolus. One pill every three of four hours.

No. 122. Corns.—Tar, Beeswax, Resin, equal parts; melt together. Fill up hole every five days and pack with oakum as directed in Lesson on Foot, and at same time use No. 51.

No. 123. Urinating Too Often.—Tr. Iodine dr. 1-2, Iron Sulphate dr. 2, pwd. Gentian dr. 4. Mix, make bolus and give one night and morning until relieved. P. S.—This is for horse or cow.

No. 124. Indigestion.—Barbahoes Aloes, dr. 5, Gentian, Ginger a. a. dr. 2, Nux vom. pwd. dr. 1. Mix Bolus, Sig. at one dose, then give No. 37. Give as directed. You may have to repeat the whole prescription.

No. 125. Inflammation of the Brain, Cattle or Horses.—Bathe head and neck good and often with ice water (give purgative first) then give internally as a drench: Belladonna F E dr. 1-2 to 1, with little water. Give hypodermic 1-8 to 1-3 atropine 3 or 4 times a day. Also give No. 6 if you think necessary. Quinine anyway in half dr. doses.

No 126. Fistula or Pollevil After Cut.—First pack with equal parts of alum and chloride sodium.... put in bottom of wound; let stay 48 hours, and then wash out and use the following: Cottonseed oil oz. 16. Ac carbolic oz. 2. Mix, inject in wound once per day, packing top of wound with Oakum. Also wash out with peroxide hydrogen

No. 127. Bone Spavin.—Use No. 8. Shave off hair and puncture the parts well over the bunch and apply paste, placing bandage over parts. If bad case treat as taught you on live horse lesson, by using firing iron first. This is the same as preparation used in putting up Dr. Rutherford's Spavin and Ringbone Cure for the market.

Ringbone is treated the same as spavin.

No. 128. Acid Hydrocyanic Dil. oz. ½, Tr. Peppermint, dr. 2, Sal soda oz. 1-2, F. E, Canibis, Ind. dr. 2. Mix. Give in six oz. warm water and repeat every 25 minutes until relieved. This is the same formula used at the laboratory in preparing Colic Cure for the trade. P. S.—If the horse is very restless you may give 1-2 oz. Hydrate Chloral in little water.

No. 129. Disenfectant.—Carbolic acid dr. 2, warm water qt. 1. This is for washing out wounds or sores of any kind. Another you may use is bichloride one to 500, or even weaker, one to 750.

No. 130. Fistula where you donotwish to cut it out—but this is very severe: Acetate of copper, sulphate of copper, of each 1-2 oz. White mercury dr. 2, alum oz. 1, nitric acid dr. 1, honey q. s. to make soft paste. First split parts to the bottom and take a little of the medicine, say as much as 1-2 teaspoonful, and place it in the bottom of the wound, let it remain 24 hours and then remove. After which wash good with No. 129, and let stand 48 hours and treat as at first, and keep this up until the whole tumor will fall out. This will cure any case of Fistula or Poll Evil, but as I said it is very severe. You had better grease parts below sore so as to prevent the hair from slipping off.

INDEX.

Alimentary Canal 14
Age of Horse..... 65
Action of the Heart..... 18
Ac Hycdrooyanic 36
After Birth 84
Blind Staggers 40
Bone Spavin 48
Bones of the Horse..... 21
Blain in Cattle 51
Blindness in a Few Days..... 86
Bloody Urine in Colts..... 84
Bots 82
Blood Spavin 78
Castration (Simple) 83
Bidgling of Cryptorchid..... 102
Castrating (best time) 83
Curb 82
Cutting Off Warts 78
Canibis Indica 36
Carbolic Acid 37
Colic, Spasmodic 33
Colic, Flatulent 32
Constipation of the Bowels..... 51
Costiveness in Cattle..... 53
Coupler 43
Croton Oil 42
Distemper 80
Diarrhoea in Calves..... 53
Digestive Organs 12
Enlargements 41
Explanation 29
Explanation of Founder..... 75
Fistula of the Sternum..... 49
Flux or Slimy Black Rot in Cattle..... 56
Fractures of the Bones..... 63
Fistula or Pollevil..... 37

Foaling, Mare or Cow 81
Founder, Acute 75
Founder, Chronic 76
Genital Organ of the Male 19
Genital Organ Continued 20
Gelseumium 43
Glanders 74
Gravel 75
Heaves 80
Hide Bound 82
Hollow Horn, So-called 85
Hooks in Eye, So-called 77
How to Unchoke Stock 79
Hoose Calves 55
Hints Relating to Milch Cattle 57
Hydrogen Peroxodium 38
Inflammation of the Bowels 28
Inflammation of the Kidneys 33
Inflammation of the Brain 68
Jacks and Stallions, Care of 88
Lampers 79
Lung Fever or Pneumonia 34
Lock Jaw or Tetanus 41
Moving Liquid 86
Organs of Abdomen 15
Opium or Laudanum 36
Oil Organum 57
Oil of Cedar 43
Prescription Writing 38
Peroxide-Hydrogen 38
Punctured Feet, Nail Pricks, Etc 69
Punmiced Feet 72
Quittor 70
Remarks 84
Review Lesson 44
Retention of the Urine 66
Shoeing 24
Salivary Glands 13
Sun Stroke or Heart Stroke 39
Splenic Fever 59
Sketch on Live Horse 77
Strains of Whirlbone Joint 78
Stump Suckers 82

Scouring—Watery Bowels 84
Sitfasts 83
Spaying Cattle 67
Septecaemiu in Cattle..... 68
Scratches 70
Spring Halt 71
The Kidneys 18
The Front Knee 8
The Stomach 12
The Small Intestines 14
The Colon 15
The Pancreas 16
The Heart 17
The Kidneys 18
The Foot (continued) 26
The Eye 29
The Iris of Eyes..... 80
The Weeping Eyes 77
Table Weight and Measure..... 38
Teeth, Wolfe 66
Teeth, location on 87
Tuberculosis in Cattle .....67 and 72
Thumps 34
Terms Used in Practice..... 60
Thorax 12
Treatment for Fistula or Pollevil 37
Treatment for Fistula or Pollevil After Operation..... 37
Thrush of the Frog..... 72
Thread or Bruised Coronet..... 72
To Keep a Horse From Eating..... 86
To Make Him Kick 86
To Make Him Lame 86
To Give Him Glanders 87
To Trade Ruptured Mare..... 87
Thoroughpins 82
Thick Wind 80
Wind Galls 83
Wormy Horses 77
Wolfe Teeth 64

PRESCRIPTION INDEX.

Alerative 107
Blind Staggers 105
Blister 105
Blain in Cattle 105
Blood Stopper 110
Blood Tonic at Drug Stores, No. 37..... 108
Bone Spavin 116
Colic, Spasmodic 105
Colic, Flatulent 116
Cough, Chronic, Horse 115
Constitpation in Cattle 105
Cough in Dogs 111
Constitpation in Dogs 111
Congestion of Brain in Hogs..... 112
Cough Balls for Horses..... 107
Condition Balls for Horses..... 107
Collar or Saddle Sores..... 109
Colic in Cows..... 110
Costiveness in Cattle 106
Catarrh in Cattle or Horses, Use No. 50..... 109
Dyspepsia 110
Diarrhoea in Hogs 112
Diarrhoea 110
Diarrhoea in Calves 106
Distemper in Horses, give Dr. Rutherford's Blood Tonic; if swollen, bathe parts with Favorite Liniment.
Distemper in Dogs 111
Eczema 114
Eye, Inflamed 114
Eye Water 114
Eye Lotion 108
Flux, or Slimy Black Rot in Cattle..... 106
Fever Mixture .....108; if high give 98
Fly and Mosquito Oil..... 113
Fistula Liniment 185
Fistula or Poll Evil (After Cut)..... 116
Fever, Splenic (in Cattle)..... 106
Gall Cure 110
Gas Colic, Horse or Cow..... 115
Gravel in Stem of Bladder..... 109
Healing Powder for Wounds..... 107

Hoof Liniment 109
Hoose (in Calves) 106
How to Fatten Stock..... 108
Heaves 106
Heaves, How They are Patched Up..... 108
Hog Cholera 108
Inflammation of Brain in Cattle 113
Inflammation of Udder 111
Inflammation of Kidney (Horses) 103
Inflammation of the Bowels (Horses)..... 107
If Swollen, bathe with 59.
Itching Skin (Dogs) 115
Indigestion 115
Jaundice in Cattle 110
Liniment for Curb..... 106
Liniment for Strains of any kind..... 110
Liniment for Puffs Use Favorite Liniment.
Liniment, My Favorite (Ask Druggist).
Lice on Cattle (Use Dr. Rutherford's Dip).
Lock Jaw 105
Lice on Hogs (Use Dr. Rutherford's Dip).
Lung Fever 109
Mange, Internal Treatment 115
Mange (on Dogs) 111
Mange (on Hogs). Use Dr. Rutherford's Dip.
Mange (on Dogs) 113
Mange (Horses). Use Dr. Rutherford's Dip as Wash and give internally 5 gr. arsenic three times a day for 15 days.
Nasal Gleet 109
Old Sores 109
Mouth Sores 109
Poison, Horses and Cows..... 108
Purgative for Horses..... 108
Proud Flesh 108
Purgative for Cattle 107
Pneumonia in Cattle or Horses..... 106
Pneumonia in Hogs 111
Quinsey in Hogs 112
Quittor 114
Rheumatism 114
Ringworm 107
Sore Mouth 109

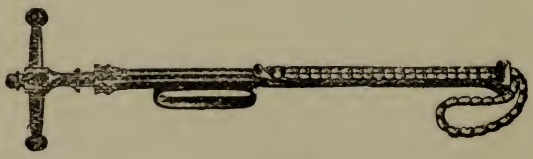
Sore Mouth and Tongue 115
Sweating Mixture 115
Snake Bite 115
Swollen Tendons (Use Dr. Rutherford's Favorite Liniment.
Scratches 107
Splenic Fever (in Cattle) 106
Screw Worm Killer 106
Sore Feet in Cattle 113
Sore Teats 114
Saddle or Harness Hurts on Back (Use Dr. Rutherford's Remedy.
Septicemia in Cattle 113
Swollen Sheath or Penis (Horses) 108
Thumps (Horses) 105
Thumps (Horses) 108
Tonic (Give Dr. Rutherford's Blood Tonic.
Tread or Bruised Coronet 114
Urine, Bloody—Cattle and Horse 113
Urinating Too Often 115
Vomiting in Dogs 114

No. 9003.

Cattle Tocar $1.25

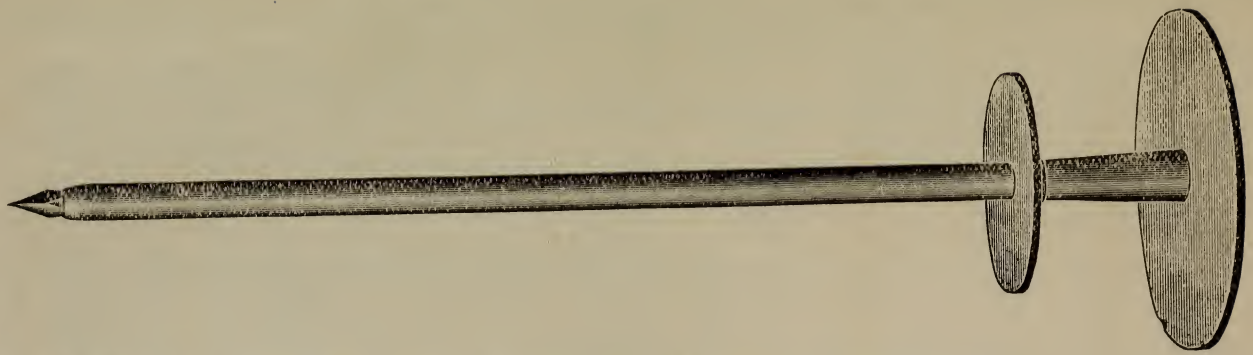
No. C 9075.

Dr. Rutherford's curved Favorite Emasculator for castrating horses, bulls, dogs, sheep, goats and all kinds of animals, standing. This machine can be adjusted by a screw so as to operate on the smallest to the largest animal with safety. "Two instruments in one." Dr. Frank E. Rutherford has done some of the most rapid castrating with this machine known to the profession. In June, 1909, W. O. Baldwin of Haskell, Texas, had a five-year old stud gelded in 18 seconds, without throwing, tieing or searing and the rider did not dismount for the operation. Price **$6 75**

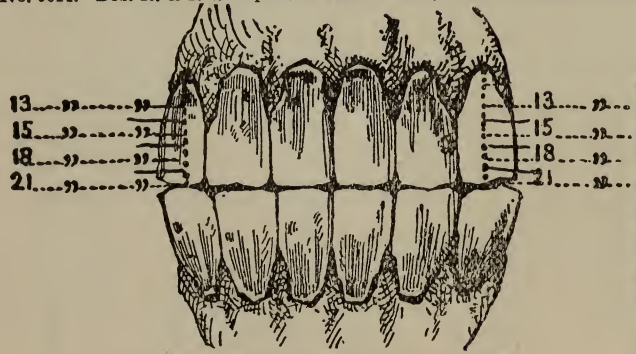


No. 9078.

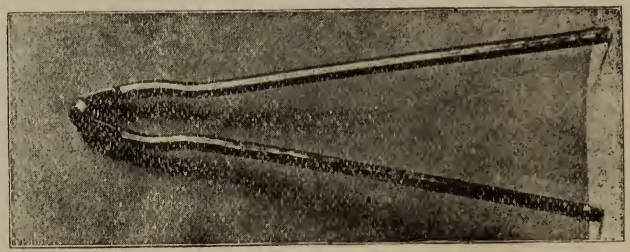
Ecrasuer for castrating ridgelings horses, taking off warts, tumors, etc. Price **$6 75**



No. 9014. Drs. R. & R's. Improved Horse Tocar, with extra wide shield, which prevents the Tocar from slipping $1.25



No. 43. Age of the Horse from 13 to 21 Years.
(Trace groove in center of corner teeth above.)



No. 100 Drs. R, & R's. Nose Clamp, used in handling viscious stock especially dental work and castrating. Far superior to the nose twist. 20 in. long $2.50

Dallas Veterinary Correspondence School

Chartered 1907 by Texas' Laws

Write for Booklet Giving Particulars.

Address D. V. S., P. O. Box 733,
DALLAS, TEXAS

DR. RUTHERFORD'S STOCK MEDIDINE

(NOT FOOD)

For Sale by all Leading Druggists.—"Quality not Quantity"

No 59. Dr. Rutherford's Favorite Liniment, for man or beast. Price 50c
No. 37. Dr Rutherford's Powdered Blood Tonic for horses and cattle. (A tonic, not food), formuly on box. Price 50c
No. 128. Dr. Rutherford's Flatulent Colic Remedy 50c
No. 2. " " Spasmodic Colic Remedy 50c
No. 51. " " Hoof Tonic, for sore feet, hard feet, narrow heel, thrust, dead feet 75c
No. 133. Dr. Rutherford's Poultry Medicine 25c
No. 8. " " Sprvin and Ring Bone Remedy 50c
No. 132. " " Insect Killer 25c
No. 24. " " Healing Powder for wounds and barb wire cuts 25c
No. 20. Dr. Rutherford's Liquid Screw Worm Killer 25c
No. 69. " " Gall Remedy 25c

Manufactured Exclusively by

Drs. R. & R. Co., Dallas, Texas

Register No. 62122 **Guarantee No. 5279**

LB JL '11

Certificate

This is to Certify That I, _____

_____

have bought a Course of Lectures from Dr. Frank E. Rutherford on Diseases and Defects of Stock. I solemnly agree and pledge my word that I will not give away any information gained by reading lectures or lend my book to be read outside of my family.

_____

This the _____ day of _____ A. D., 191

JUN 13 1910

PRIVATE LESSONS

—ON—

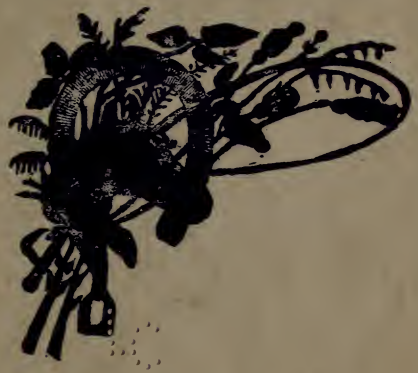
DISEASES

—OF THE—

HORSE AND COW

—BY—

DR. FRANK E. RUTHERFORD, V. S.



PRICE $5.00

LIBRARY OF CONGRESS
0 002 825 501 9